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Paper Mills Seriously Damaged by Floods

While Property Damage Will Be Less Than Indicated by Newspaper Reports, Loss Will Prove Considerable—Book and Writing Paper Manufacturers Heaviest Sufferers—Temporary Shift In Sources of Supply Necessary

Flood conditions in various sections of the country have seriously affected the paper industry, particularly the manufacturers of book and writing papers. At the time of writing, fifty-six mills located all throughout the Northeast, and Virginia and West Virginia, have reported interrupted operations, ranging from one day to three weeks.

Charles W. Boyce, executive secretary of the American Paper and Pulp Association, told the PAPER TRADE JOURNAL that while actual property damage will probably be less than indicated by newspaper reports, interruptions to operations are causing considerable difficulties.

Mr. Boyce also declared that temporary shifting in sources of supply had been made necessary by the flood conditions, creating particular difficulties for purchasers and consumers that do not carry adequate stocks of paper on hand.

This is especially true, declared Mr. Boyce, because of the fact that the white paper mills were the most seriously affected. These mills have been running in recent weeks at a higher rate of capacity than at any time since the depression.

As a result of the floods it is estimated there will be a decrease of 15 per cent operating time in the East, which will definitely create a temporary shortage of paper. While this is more a specific than a general condition, it may have a pronounced effect on spot market prices, concluded Mr. Boyce.

Holyoke Mills Suffer Little

Holyoke paper mills suffered very little comparatively, to their mill structures, although the loss in business and in cleaning up will amount to large figures in the greatest flood in the city's history. Saturday morning the high peak of 16.80 feet over the crest of the dam was reached. A hard fight was made with the aid of over 400 workers to check the flood from washing down the tracks of the Boston and Maine Railroad and thence into the canals which would lead to the probable destruction of a half dozen to a dozen paper mills.

Sandbag ramparts 10 to 12 feet in height were built at each end of the big stone dam, which effectually warded off the torrent from breaking through at the bank on the north side or by the end of the head gate house on the south side.

By Sunday night the height of water in the river had dropped to 13 feet and has continued to fall since that time. The fall to normal will be slow, but it will probably not be able to begin the "mopping up" in the paper mills for several days.

Practically all of the paper mills were forced to close with one or two exceptions. The Linden Division of the American Writing Paper Company, Inc. began operations Saturday. The Crocker-McElwain Co. was not affected by the flood, lying as it does between two canals.

The only casualty to the paper mills on the river bank was the destruction of a stockhouse on the river side of the Albion Division of the American Writing Paper Company. This stockhouse was damaged by the flood in 1927. It was unoccupied.

The American Writing Paper Company was the first to sense the danger from the flood and Wednesday morning moved all its raw material and finished paper to the upper stories of its various divisions. Comptroller L. C. Reynolds told the Holyoke correspondent of the PAPER TRADE JOURNAL that he did not expect any large damage to any of the mill buildings. The principal loss to the company would be that of lost business and the cost of "mopping up" after the flood.

No damage to buildings was expected by the Taylor-Logan Company, Franklin Paper Company, or Newton Paper Company, the Parsons Paper Company. The Whiting Paper Company No. 2 and 3 mills are also between canals. The No. 1 mill is on the river bank but that too is expected to escape damage.

Two large paper converters, the National Blank Book Company and White & Wyckoff Company will doubtless escape damage to their buildings.

Freight service was cut off north and south by the flood and may not be resumed for several days yet.

Fitchburg Mills Hard Hit

At Fitchburg, Mass., the eight mills of the Crocker-Burcank & Co. Association were flooded as well as those of the Fitchburg Paper Company. More than $750,000 damage was reported done to these mills.

The Louis Dejonge Company mill is said to have suf-

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Paper Industry Opposes Stream Pollution Bills

Chas. W. Boyce, Secretary of A.P. & P.A., Appearing Before Subcommittee of the Senate, Said the Proposed Bills Did Not Recognize Certain Fundamental Principles and Urged Committee to Report Adversely on Them

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 25, 1936—"The paper and pulp industry does not wish to question the fact that a stream pollution problem exists or that something should be done about it," said Charles W. Boyce, executive secretary of the American Paper and Pulp Association testifying on Monday before the special subcommittee of the Senate Commerce Committee in opposition to the stream pollution bills.

Others Appearing in Opposition

Others appearing in opposition to the bill included: the Anthracite Institute, United States Chamber of Commerce, National Association of Manufacturers, American Mining Congress, National Coal Association, National Resources Board, and others.

"The question," said Mr. Boyce, "is what shall be done. The answer is by no means a simple one, nor is its effect limited." Mr. Boyce continued:

In common with industries that use water in their manufacturing processes, the paper and pulp industry discharges its excesses into nearby streams. The industry is interested, therefore, in legislation having to do with such discharge. On the other hand, the industry requires large quantities of relatively pure water; it is, therefore, interested in being able to obtain its requirements. Moreover, the industry has had a variety of experience with legislative attempts to control or to prohibit pollution. This statement of position in respect to Senate Bills 3958 and 3959 is based upon the technical and legislative experience of the industry.

Will Not Accomplish Desired Results

The paper and pulp industry is opposed to the provisions of Senate Bills No. 3958 and 3959. It believes that the measures proposed in these bills will not accomplish the desired results, that they will place staggering burdens of financial expenditures upon local communities and upon industries, which if actually made, can assure but partial abatement of pollution in the light of present knowledge; that they give to a Federal agency, upon which industry may not be represented, sufficient power to dictate whether industry or its units may operate or not; and, more importantly, that they block cooperative approach to the problem by their threats of coercion and by substituting Federal for State jurisdiction.

Municipalities and industries have always been accustomed to discharging their waste into streams. This custom has become fixed by practice and it cannot be altered abruptly by any known means. A long process of technical and market research and of public education is necessary before measures of control or prohibition can become effective. Under such circumstances, coercion would seem to be exactly the wrong approach; the conditions clearly dictate cooperation in which all interests are adequately represented and all possibilities are explored.

Whenever a public problem arises there is always a cry that "there ought to be a law." Federal and State statute books are cluttered up with laws that provide for prohibition, for control and regulation and for investigation of any number of conditions. Enactment of such laws is, indeed, an American custom. In spite of the fact that many of such laws are unnecessary for usually workable legislation already exists and that they are almost always unenforceable, we do not seem to learn from experience. Many persist in the belief that miracles can be legislated.

In the case of stream pollution, for instance, the so-called Oil Pollution Act has been on the books for more than twelve years, and though it has proven unenforceable in dozens of cases, the Congress is asked in S. 3958 to broaden its scope and take in even more territory.

Deposit of Refuse in Navigable Waters Generally

There is now on the books the Act of March 3, 1899, appearing as Section 407, Title 33, United States Code Annotated, entitled "Deposit of Refuse in Navigable Waters Generally." This section provides in substance that it shall be unlawful to discharge or deposit from any ship or floating craft or any manufacturing establishment or mill, any refuse matter of any kind other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable water of the United States or any tributary of any navigable water from which the same shall float or be washed into such navigable water.

Whoever drew the bills now before this committee had this old Statute before him. No doubt he examined the cases thereunder. These cases disclose that the courts have held that the deposit of refuse matter in a tributary of a navigable river constitutes a violation of the Section, even though the navigation is not impeded or obstructed. The question naturally arises: what can or could be accomplished under these pending bills which cannot now be attained under the present Statute? What efforts are now being made to enforce the law as it is? Wherein do the present Statutes fail?

These references have been to Federal laws. In his testimony before the House of Representatives' Select Committee on Conservation of Wild Life Resources on February 27, 1936, Abel Wolman stated that the Advisory Committee of the Natural Resources Board found that a number of States had adequate legislation on stream pollution, that is, they now have the powers of investigation, of regulation and of penalty and enforcement. He added that the committee found that the States with adequate legislation showed no better accomplishment than the States that had inadequate legislation. He concluded that "mere existence of law is not the solution to a difficult wide-spread problem." He emphasized especially the importance of cooperation with State Departments of Health, pointing out that in some instances a great deal has been accomplished without any important legislative backing, purely on the basis of voluntary discussion and cooperation.

Letter from Acting Secretary of Treasury

Bearing upon this aspect of the problem I wish to quote from a letter signed by Acting Secretary of the Treasury, T. J. Coolidge, to Hon. J. J. Mansfield, chairman, Committee on Rivers and Harbors of the House of Representatives, dated August 16, 1935:

"The Public Health Service has been intimately connected for many years with the problem of pollution of

waters and is interested in any action that may tend to bring about an improvement in the sanitary conditions of such waters. However, knowledge of conditions now existing, as well as the history of efforts of the States to bring about improvements, indicate that such improvements cannot be accomplished through drastic legislation. On the other hand, it is believed that drastic legislation would delay rather than accelerate the application of remedial measures.

"Even in the larger and older States that have provided adequate laws and enforcement personnel, abatement of pollution of waters has not advanced as rapidly as might have been expected. This is probably due to the fact that dilution of sewage in larger streams and coastal waters has been considered adequate treatment and that the problem of dilution has not become sufficiently acute to arouse the public to a demand for funds for remedial measures. Successful enforcement of any law is dependent upon popular support. Where compliance involves expenditure of large sums of money with corresponding increases in taxation, enforcement becomes more difficult.

"The Public Health Service believes that the solution of the problem lies in cooperative activity by the Federal Government and the various States with such enforcement as is necessary by the States under their police powers.

"Economical methods of treatment have been devised for a few classes of industrial wastes; yet the effluent water from the treatment plants still necessarily contains certain compounds in solution and may contain small amounts of finely divided materials. For many of the industries methods of treating wastes are as yet unknown or the cost is prohibitive."

Findings Corroborated by Paper Industry

The paper and pulp industry, whose investments amounting to two billion dollars are distributed among thirty-seven states, has an aggregate experience that corroborates these findings.

The question that arises next has to do with purposes of cooperation. They may be stated simply, for the broad purposes fall into two classifications of which the first is to determine technical and economical methods of waste disposal or utilization. The second is to encourage the adoption of such methods by municipalities and industries as rapidly as possible.

Thus the solution of this problem is similar in character to the solution of other far-flung problems; it is simply a step by step process, first, to determine methods of solution, and second, to obtain wide-spread application of the methods.

In the light of present knowledge, the discharge of wastes into streams cannot be avoided if industry is to continue to operate and to give employment to the millions dependent upon it. In fact, regardless of expenditures for sewage disposal and industrial recovery plants the best that can be hoped for now is simply a diminution in the amount of pollution. Methods of purifying mill and factory effluents are in many instances unknown and in many others the known methods involve prohibitive cost. All agree that the elimination of industrial wastes from mill and factory discharge demands extensive technical and market research, for commercial utilization is held to be the crux of the industrial waste problem. Impounding of waste-bearing waters and evaporation without utilization of the residues, simply delays pollution and accomplishes little in the long run, but it does add substantially to the cost of manufacture.

Has Spent Over Two Million Dollars

The paper and pulp industry has spent over two million dollars in research in the utilization of sulphite waste liquor alone. Satisfactory results have not been obtained, although promising leads have been developed. Possible products are either low in value or extremely limited in demand. Known evaporation processes which permit the use of the residues for fuel are economically feasible only in regions where fuel costs are extremely high.

In the case of municipal waste, the question seems to be largely one of public financing. Even so, however, it is not yet possible completely to eliminate pollution by known processes except by combining processes which add greatly to the costs. Again more study is needed before this problem can be considered as being satisfactorily solved.

Before taking up the specific proposals of the bills under consideration, I want to point again to the testimony of Mr. Wolman in which it is stated that the pollution problem is not nation-wide in scope. Mr. Wolman correctly relates pollution to the concentration of population and of industry, and he points specifically to the relatively few industrial states where the conditions of pollution are serious.

Furthermore, it is the experience of the paper and pulp industry that the oxygen demand of wastes varies widely with the character of the stream. Because of this and because of the different character of wastes that are discharged into different streams, prevention methods involve study of specific streams and of specific related industrial and municipal conditions. Such studies can best be made by the respective states.

Influence of the Proposed Legislation

Now, then, what influence will the proposed legislation have in furthering the solution of this problem? Specifically, Senate Bill No. 3958 provides, among other things, for the establishment of a Federal agency and it would give that agency power to establish standards of purity in every stream in the United States, from the tiniest trickle to the mighty Mississippi. The agency is authorized to formulate rules and regulations as to the discharge of wastes into such waters within the boundaries of so-called "Sanitary Water Districts," which are to be delineated by the agency. No provision is made for consultation with the affected industries or municipalities; there is no reference to the economic and technical possibilities; and even recourse through the courts is blocked, for the agency is authorized to bring action in Federal courts for the violation of the rules and regulations that it may set up. The Congress of the United States has rarely, if ever, been asked to give to any agency such a broad grant of power in times of peace.

Regardless of the bill's provisions for cooperation and study, it is plain that the chief intent is to coerce municipalities and industries to take action. In effect, the bill proposes to extend a cooperating hand, but the hand grasps the "Big Stick," for if this type of legislation is to be significant at all, it must imply the full use of the powers that it authorizes. It is inconceivable that such intent will stimulate cooperation; on the contrary, it is more likely to be discouraging. If this is not the intent of the bill, why are such all-embracing powers requested for the Federal agency?

The bill provides for the continuation of the Natural Resource Committee and it names cabinet officers and presidential appointees as the members of committee. All but those appointed for definite periods will change with changes in the Administration. The proposed "District Boards" are to be appointed by the Natural Resource Committee, which obviously means an almost complete turn-

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Boston Paper Trade Association Celebrates

Fiftieth Anniversary of Organization Fittingly Marked by Banquet and Meeting at Algonquin Club—Many Distinguished Guests Present from Near and Far—Speaker Discusses Present Trend in National Legislation

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, March 23—Honored by the presence of nine past-presidents, the president of the National Paper Trade Association, the president of the Writing Paper Manufacturers Association and a speaker of national reputation, and with a total attendance of nearly 150, the fiftieth anniversary of the Boston Paper Trade Association was fittingly celebrated Wednesday evening at the Algonquin Club. The banquet was preceded by a reception and reunion.

Souvenir Book Presented

As the members and guests assembled at the tables, Secretary John L. Hobson called attention to the book at each member's place. The book, inscribed on the fly-leaf with the name of the member to whom it was presented, is bound in blue with a monogram of the association's initials, and printed "in recognition of the completion of a half century of honorable history."

The book contains a foreword by President Frederic W. Main; a review, "pulsing with life and fellowship," and reminiscent in a happy combination of the serious and lighter veins, of sayings of some of the members and events in which members were concerned, by Colonel Charles S. Proctor; "a roster of men who have served this Association in positions of trust; our time-honored by-laws, adopted in 1886, and continued with few changes as a guide to our actions," and a list of members as of January, 1936, presented to members as a keepsake. The book contains also portraits of presidents of the Association and a chronological list of past officers.

Included in Col. Proctor's review is a roster of "exceptionally matured vintages": (Charles L. Baird, Arthur M. Burr, Frank P. Carpenter, George E. Crafts, Clifton A. Crocker, Nelson Curtis, Arthur B. Daniels, John E. A. Hussey, William W. Jenks, William B. Livermore, R. Franklin McElwain, George E. Montague, Horace E. Moses, Willard N. Munroe, Walter J. Raybold, Orren C. Robertson, Albert R. Smith, Joseph D. Snell, Edward H. Stone, John W. Vivian, Fiske Warren, Mark H. Warren, William F. Whiting, Hammond M. Whitney and Charles A. Young.

Honored Guests

Seated at the head table were Robert Lincoln O'Brien, the speaker of the evening, President Frederic W. Main, First Vice-President F. Bendel Tracy, Second Vice-President W. J. Raybold, Treasurer T. Charles Casey, Secretary John L. Hobson, Oswold F. Marquardt, president of the National Paper Trade Association, and Robert M. Stone, president of the New England Paper Merchants Association. Past Presidents attending, who sat together at one table, were John E. A. Hussey, Nelson Curtis, Arthur L. Hobson, Colonel Charles S. Proctor, Mark H. Warren, John A. Andrew, Norman Harrower, Hubert L. Carter and Albert R. Smith. These gentlemen, with the three other past-presidents, Charles L. Baird, Herbert W. Mason and Charles A. Esty, who were unable to be present, composed the reception committee.

Throughout the banquet there was lively community singing, led by E. Lindsey Cummings.

At the beginning of the post-prandial period, President Main said it gave him great pleasure to welcome all. In the business meeting, the report of Treasurer Casey showed the organization in very good financial condition. Secretary Hobson's report noted a membership of nearly 200, with 173 active members and fifteen associate members.

An impressive part of the meeting was the sounding of taps for Arthur C. Hall, who had died during the year.

The following new members were elected: Regular membership—L. J. Parant, St. Croix Paper Company, of Woodland, Me., proposed by Arthur L. Hobson, and Horace S. Proctor, Proctor Paper Company, of Lowell, Mass., proposed by Colonel Charles S. Proctor. Limited membership—Harold Hinckley, St. Croix Paper Company, of Boston, Mass., proposed by Arthur L. Hobson, and Edward H. Sussenguth, American Writing Paper Company, of Boston, proposed by W. Edwin Porter, Jr.

Officers Elected

The names of new officers for the ensuing year were read by Colonel Charles S. Proctor, chairman of the nominating committee, of which the other members are John W. Vivian, M. L. Madden, John E. A. Hussey and Jesse G. Swift. The officers, as elected were the following: President, F. Bendel Tracy; First Vice-President, Walter J. Raybold, Second Vice-President, Winthrop L. Carter; Treasurer, T. Charles Casey; Secretary, John L. Hobson.

Executive Committee—Norman Harrower, Charles W. Fields and W. Edwin Porter, Jr.

Membership Committee—W. N. Stetson, Jr., Chairman, Royden Loring, R. M. Stone, Willard H. Loud and Hubert W. Lockhart.

Arbitration Committee—George W. Wheelwright, Chairman, Arthur L. Hobson, Irving N. Esleeck, Jesse G. Swift and Harry C. Thayer.

Auditor—William Ross.

Colonel Proctor said that on this occasion we are happy as an association that has no business cares, with the fine tradition that this association keeps alive without trying business troubles.

President Main said they had hoped to have the president of the Paper and Pulp Association, Frank J. Sensenbrenner present, but he was unable to come and sent congratulations.

O. F. Marquardt Speaks

President Oswald F. Marquardt, of the National Paper Trade Association, said when he received the invitation, he didn't realize the Association had a history which goes back over fifty years. "It makes me think and wonder why any association can't get together in such harmony of spirit as this association. When I come up here to Boston I see the greatest feeling of friendship." Mr. Marquardt noted the words of Edgar Rickard, of the Pejepscot Paper Company, who said the paper merchants were a bridge between the manufacturers and the consumers and no bridge is perfect without exits and entrances properly laid out and "this struck me as darned good sense.

"The manufacturer produces the goods, but very few

manufacturers know what it means to distribute the goods. The distributor has his place in this scheme of things today. It is the business of the merchant to see that the bridge is kept open properly. The National Paper Trade Association is only 32 years old, but brings to you tonight greetings."

Further Interesting Addresses

Irving N. Esleeck, president of the Writing Paper Manufacturers Association said that his association is celebrating its 75th anniversary and this year extends greetings to the Boston Paper Trade Association and trusts that it will continue to function as well in the future as in the past. The first meeting held in Boston was called to order by Zenas Crane.

Robert M. Stone, president of the New England Paper Merchants Association said that his Association not only thinks well of the Boston Paper Trade Association, but many of the members belong to the Boston Association.

President Main then read the list of past-presidents of the Boston Paper Trade Association, with great applause

Nelson Curtis, the oldest past-president, was reminiscent, relating a conversation between the Hon. Curtis Guild, Governor of Massachusetts at the time, and James B. Forsyth. Mr. Curtis said he was much pleased to be present.

Edward H. Stone was introduced as the oldest youngest member. Mr. Stone said, "I am a charter member and my thoughts go back to the time when this organization was started and there was great interest among the members. It gave me much help in my start. I appreciate being a member 50 years.

R. L. O'Brien Guest Speaker

Robert Lincoln O'Brien, chairman of the United States Tariff Commission, formerly editor of the *Boston Herald*, the guest speaker, was introduced as the man who used to write editorials in the *Boston Herald* to "help people to start the day right." In his opening remarks, Mr. O'Brien commented on the favorable report of the treasurer. His subject was "The Present Trend in National Legislation." Mr. O'Brien intimated that he thought we thought too much of the national government in terms of geographical division, but that it seemed to him we had reached the stage of pressure groups.

Our bonus army has just obtained upwards of two billion dollars from the treasury. This was the bonus to end bonuses, but it is only the beginning. Another pressure group is the farmers' group. We need to buy of the farmers and pay them for their products. That has all passed away. There has arisen in the land a feeling that the farmers are entitled to something more than they have had. I speak from a non-partisan point of view.

The speaker referred to the cotton situation at the time of President Wilson's administration. People bought farm products because the farmers wanted to sell. The farmers have been getting more and more. Everybody has some kind of a subsidy for the farmers. You gentlemen ought to get together and see what kind of a subsidy you can get for the paper trade.

Referring to prune culture, Mr. O'Brien said we used to send Germany 30,000 tons of prunes a year, one-tenth of our annual production. As a result of developments Germany bought of Czecho-Slovakia and now buys only 3,000 tons annually here. We must now get the United States to subsidize the selling of prunes. California wanted the prunes macerated, so that in England if you buy, you realize that the United States is helping to pay for the macerating. Referring to the protective tariff, the speaker said there is a very strong sentiment in the House and Senate and the pressure group is a very strong group.

Who is going to pay for all this? People in this part of the country are too sensitive in paying inheritance and income taxes. The capitalists, I see around me think they are paying much more than they ought to. Our taxes are very largely buried in business costs. The telephone user is paying nearly $7 a year on his telephone alone. People who are using gasoline are paying the taxes in the price of gasoline. Another tax is on cigarettes, "confined to all women and some men."

The speaker referred to the amount of $1,200,000,000 a year spent on the Army and Navy, saying he did not see the need of so much for military equipment. "You can't spend a billion dollars a year without creating lobbies which will make it impossible or very difficult to stop the movement. I wish I could convey to you the force of spending money."

Referring to the Civilian Conservation Camps, he said that 217 members of the House of Representatives signed a petition to ask the President to have money passed and not to cut the appropriation. Speaking of another factor, the Government employees themselves, he said a man was in court three days trying to get rid of a very inefficient teacher. There is an association of Government employees affiliated with the American Federation of Labor. The speaker said he should be very sorry to see the Government take over the railroads, the prune industry and some other industries, although the railroad employes would rather have Government ownership. He noted that Virginia gave a solid vote to the President on vetoing the bonus.

Mr. O'Brien spoke of his going to Washington, in 1893, where he was pretty well acquainted with the senatorial group. He related stories in connection with Grover Cleveland, who would have been 99 years old that very day.

In summarizing, the speaker said that this country is in great danger from the pressure groups. Take silver and sugar. Look at the great power that those in favor have brought to bear. Beet sugar is a great industrial enterprise; so is silver. We can see the pressure groups and feel their power. Who is going to stand out against them? Take the Townsend Plan to take twenty-six million dollars a year. The speaker referred to hearing a lecture by Vernon W. Main from Michigan who went into the fight as 100 per cent on the Townsend Plan and spoke of the yielding in that State to this pressure group. He also mentioned the processing tax. We got *problems* in this country. We are coming pretty close to living under the pressure groups. The Government is made up of members of the House of Representatives and the Senate who live under the shadow and power of pressure groups. Think of them all. Mr. O'Brien's address was warmly applauded.

Newly Elected President Welcomed

President Main said that beautiful flowers were to be sent to Charles L. Baird, who was unable to come. Another former president, Charles A. Esty, is on the high seas. Mr. Main quoted the words of Mr. Esty, who said to him, "This gavel is now up to you." The president said he appreciated the honor given to him and the forbearance of the members. "I have in my hand this old hammer," he said, in addressing F. Bendel Tracy, the newly elected president, "and it is a great pleasure to hand this to you, Ben. It's now up to you and remember that the first fifty years are the hardest."

President-elect Tracy expressed his thanks for the high honor conferred on him. "We have heard a very ad-

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Outlook for Newsprint Paper Industry Improves

Solution of Serious Problems Besetting Manufacturers During Past Several Years Believed Nearer—Progress Made Towards Lifting of Receiverships —Considered Necessary Preliminary to Higher and More Stable Quotations

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 23, 1936—Developments in the newsprint industry continue to move towards a solution of the serious problems which have beset the industry for the past seven or eight years. It is recognized that the lifting of receiverships among the major producers is a necessary preliminary to any successful efforts for the establishment of a higher and more stable price for newsprint, and progress in this direction is reported.

The *Financial Times* of Montreal, this week states that the Bowaters-Beaverbrook offer for Price Brothers has been almost fully worked out and is practically ready for submission to creditors and security holders. The trustee-in-bankruptcy, the Hon. Gordon W. Scott, it further says, appears fairly sure of obtaining the approval of all concerned in the reorganization. This is suggested by a report in Montreal financial circles that a syndicate of bond houses has already been formed for the underwriting and public offering of the $7,000,000 or $7,500,000 of income bonds involved in the refinancing plans.

From reliable quarters it is further stated that Montreal and New York interests are understood to be behind a reorganization plan for the Abitibi Power and Paper Company, and that this plan will be submitted to the trustee-in-bankruptcy and bondholders' protective committee at a comparatively early date.

Meanwhile the upswing in newsprint production continues, the output for Canadian mills for February, at 221,569 tons, representing an increase of 23 per cent over the output for February, 1935. For the first two months of this year the increase in output has been 67,260 tons over the parallel period of last year.

St. Lawrence Paper Mills

The report of the St. Lawrence Paper Mills Company, Ltd., for the calendar year 1935, shows a betterment as compared with the results of the previous year, the loss after expenses but before depreciation being $30,963, as compared with $366,981. The feature of the report is the announcement that the directors will recommend to shareholders at a special general meeting that certain capital assets of the company be written down to present-day values and a corresponding reduction made in capital account represented by the company's outstanding common shares. It is pointed out that neither the number of outstanding shares nor the actual value of these shares will in any way be affected by the proposed action and the assets of the company will remain exactly as they are.

The report of St. Lawrence Corporation for the year ended December 31, 1935, shows that the holding company had a loss for the year of $8,961, which added to the deficit brought forward after adjustment at $11,569, left a deficit in the current report to be carried forward of $20,531.

Steady Earnings for Brompton Co.

The 1935 financial statement of the Brompton Pulp and Paper Company, Ltd., shows net operating earnings of $205,706, after deduction of general expenses, including executives' salaries, directors fees, together with provision of an amount of $65,259 towards depletion. In 1934, net operating earnings were $199,299. After addition of miscellaneous income at $8,878, and provision for depreciation, legal fees and interest, there was a net deficit on the year of $88,660, which, added to deficit brought forward, as adjusted, at $925,887, made a net balance of $1,014,547 to be carried forward into the current year.

In the directors' report, President Arthur F. White states that the board recommended certain adjustments be made in capital valuations, the net effect of which is shown in an accompanying pro forma balance sheet. This recommendation, he states, is in keeping with the general readjustment of values which has taken place during recent years. A special meeting of shareholders is being called to deal with this proposal.

Donnacona Paper Co.

Details of the proposed reorganization scheme for the Donnacona Paper Company have just been issued. Under the plan, holders of the first mortgage bonds will waive sinking fund payment due February 1, 1936; cancel unpaid interest for the two years to February 1, 1936, and will accept interest at the rate of 3 per cent for the year ending February 1, 1937; 4 per cent for the next year and 4½ per cent thereafter. Maturity of the bonds will be extended eight years to February 1, 1956. Modifications will also be made in sinking fund provisions.

As consideration for these concessions, the company is to issue 131,680 new class A shares to the bondholders at the rate of 20 shares per $1,000 bond. Consequent upon this distribution, the total A stock outstanding will be increased to 253,484 shares, while the number of B shares remains unchanged at 123,088.

The A shares will carry exclusive voting rights until February 1, 1944. On that date, provided the company has fulfilled all its obligations under the trust deed, or at such time thereafter as the company will have fulfilled such obligations, the two classes of stock will be merged and the distinction between them disappear.

Japan's Paper Industry Expands

Noteworthy developments in Japan's paper industry during the end of the year were the installation by several companies of additional equipment for producing new types of paper and board, according to recent information from Assistant Trade Commissioner Carl H. Boehringer, Tokyo. Mishima Paper Company's expansion work was completed and it began to produce cigarette paper for the Government Tobacco Monopoly Bureau at the rate of 260,000 pounds monthly. The Asahi Paper Company also added sulphite paper of a very superior quality. This company has been producing about 500,000 pounds of printing paper monthly. The Nihon Rayon Pulp Company, Limited, was installing up-to-date machinery for the manufacture of kraft paper and expects to commence production by April, 1936. The mill in Taiwan which is to produce wall insulating boards from bagasse is expected to begin operation shortly. Installation of equipment for another company was completed during November and it has started production of printing paper and kraft paper with a total capacity of 700,000 pounds per month.

Paper Business Rather Quiet In Toronto

Demand for Various Standard Grades of Fine Paper Continues Listless—Tissue Products, Moving In Good Volume—Glassine, Greaseproof and Waxing Manufacturers Doing Well—Paper Board and Box Industries Active

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 23, 1936—March is closing with a rather quiet monthly record of business and one that has existed since the beginning of the year, with occasional bright spots. Most fine paper lines have been more or less quiet since the first of the year, although it is believed that the first quarter of the current year will show sales equal to, if not surpassing, those of last year. The European situation, as well as the Canadian-United States tariff pact, apparently have had their effect on sales of paper with their aftermath of small lot buying by wholesaler and consumer. No stocks of any dimension are being put in by either wholesaler or printer, although some of the paper merchants have reported a tendency on the part of the consumer of late to select better stock, which is now giving the finer grades a chance.

So far this year the paper mills have not shown as great activity as last. In most cases book, bond and writing plants are just about caught up with current orders and none of them have much business in sight. One or two mills report sales as about normal for this time of the year but it does not appear as if the fine paper industry as a whole was as busy as it should be. However, with the spring coming on with its freedom from privation in most activities, it is believed that prosperity in paper lines will reach satisfying proportions. Some allied paper lines, such as the paper box industry and paper board, are quite busy and it is reported that mills have notified some of the distributors to lay off taking orders until the machines have caught up. Quite a nice business is being done in paper box manufacture.

There is a fair demand for various grades of envelopes and machines are fairly busy, although the paper converting trade generally remains quiet. Manufacturers of glassine, greaseproof and waxing are doing well, but their operations are hampered somewhat by importations from European countries. Tissue mills are quite active and a good business is being done in all tissue products, including specialties.

Firstbrook Sale Approved

Acting on a motion of the Toronto General Trusts Corporation, trustee under a mortgage securing an issue of $519,940 six per cent first mortgage bonds, Mr. Justice MacKay at Osgoode Hall, Toronto, this week, made an order approving the sale of the property and assets of Firstbrook Boxes, Ltd., to the Gair Shoe Company of Canada, Ltd. The bondholders voted on March 13 to accept the offer that the Gair Company had made to the Toronto General Trusts Corporation, as trustees, and E. J. Howson, as receiver and manager for the box company, for the purchase of the Firstbrook Company's assets.

Celebrates 60th Year in Business

Founded in 1875, the firm of Barber Ellis, Ltd., head office Toronto, and widely known manufacturers of envelopes and paper dealers, will this year celebrate its 60th anniversary. On the last day of 1935 a telephone conference across Canada linked up the branches and each was able to take part by hearing and speech in the conversations of others. Greetings were given by E. H. Ellis, chairman of the board, and F. M. Ellis, president, from Toronto. From Brantford, General Manager C. G. Ellis also took part. Others speaking were the various managers of branches from Halifax to Vancouver.

Says Mill to Remain Open

With the demand for Canadian newsprint at a high level and with indications that the production in Canada will soon be at its peak, Mayor Charles Cox, M. L. A., said in Port Arthur this week that the Thunder Bay newsprint mill, from information he had received, would continue to operate at Port Arthur all summer. "The Thunder Bay mill has purchased a large supply of raw material and, I understand, is in position to continue for an indefinite period," he said. During this week Mayor Cox met Manager R. B. Chandler, of the Public Utilities Commission, concerning a request for the Abitibi Power and Paper Company, for readjustment of its power account, involving electric energy supplies by the Commission to the Thunder Bay mill. The mill has paid its power account every month, but under protest.

Ontario to Control Newsprint Marts

A clause which will give the Ontario Government an indefinite measure of control over the newsprint and lumber markets was attached to the Hon. Peter Heenan's "reallocation-of-timber limits" bill when the law was introduced in the Legislature this week. The added clause provides pulp, paper and timber companies using the Crown's northern timber concessions may be penalized for operations which are deemed detrimental to the public interests. The bill provides that these penalties will be an increase, by as much as five times, in the stumpage charges paid to the Crown by the great pulp and timber companies. The Lieutenant-Governor-In-Council is empowered to levy these increases against companies which are acting against public interest. This week's announcement of a blanket —"In respect to the stability of the forest products industry"—followed eighteeen months of newsprint negotiations at Queen's Park. During that time there have been veiled hints of some form of Government control of the price of newsprint, and definite statements that the Government was fighting alleged price-cutting raids on the newsprint market.

The clause added to the reallocation bill this week was considered the probable Government weapon for the future implementing of its newsprint policy. The penalties also lie against companies operating "in a manner detrimental to the public interest" in respect to crown revenues and the maintenance of fair wages and labor conditions. It was predicted that the blanket penalty provisions, plus the already announced clause which give the Government power to revamp the Northern timber limits, will mean a Legislature fight on the bill. Another clause puts a stiff penalty of $1,000 a day on companies violating the bill or the regulations under the bill. The bill also provides machinery which will give the Minister all information about the pulp and paper companies operating in the North on Crown limits.

Paper Demand More Active in Philadelphia

Volume of Sales Accelerated in Both Fine and Coarse Paper Division—Paper Merchants Experience Temporary Interruption of Service from New England Mills—Some Manufacturers Ship Paper by Steamer from Boston

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 23, 1936—With Eastertide in the offing, activity in both fine and coarse paper divisions is experiencing the acceleration that was forecast by those in the trade here. Factually speaking, "much water has passed over the dam" this week. Temporary interruption of service from New England mills has been experienced by paper merchants here.

The latest information gathered from the trade here concerning the effect of flood conditions on shipments of paper and paper products from the New England territory comes from one New England mill and states that wire and telephone service is crippled and they are receiving no telegrams or telephone messages and no mail had reached them that day (Saturday). However, manufacturing facilities for that particular mill are not crippled and paper will be shipped immediately when transportation and communication are established.

Some mills suffered inventory losses, and these are shipping some paper by steamer from Boston, indicating that while they are able to make and ship paper, regular routings are subject to uncertainty and changes necessary. The United States Envelope Company, so far as manufacturing is concerned, apparently have not been affected, except at the Plimpton Division at Hartford, Conn., where it was necessary to shut down, due to the break down of power plant in Hartford. However, orders on hand at the Plimpton Division will be filled from the other plants of the U. S. Envelope Company.

Word has just been received this afternoon (Monday) that transportation from Millers Falls area to Philadelphia has been opened up and after re-routing, goods will be received the third day following. The add that they are hopeful of improving this service shortly thereafter.

No reports have been received from western mills as to the conditions of shipping facilities which may be tied up on account of flood conditions along the main line of some of the railroads.

As is usually the case in flood conditions of this nature, when the river subsides, as they do very rapidly, normal conditions resume very quickly. Apparently, no general service interruption for any length of time is in view.

Association Activities

E. K. Lay, chairman of the Entertainment Committee of the Philadelphia Paper and Cordage Association, announces that plans have been completed for a shad dinner to be held on Thursday, April 2, at Kugler's Restaurant, 15th street above Chestnut, at 6:30 p.m. A private dining room on the second floor has been secured for this affair. Members are earnestly requested to arrive not later than 6 p.m., for a social half-hour and get-together, during which a libation will be served. Immediately following the dinner there will be an old-fashioned entertainment. Some of the talented members of the association, of which there are many, will provide the fun. Vincent Dirvin, John Shinners and George Hooper will provide the entertainment features. There will be no heavy speeches—just a real sociable evening that will afford an opportunity for the association's members to become better acquainted with one another, which is the prime feature of the association. Members are welcome to bring as many members of their firms as they wish. Ordinary business suits is the order of the evening. Cooperating with Mr. Lay are Frederick I. Brower, J. R. Howarth, Frank T. Hufnal, R. W. Montieth and Samuel Shyrock.

News of the Industry

Ormand Freile, vice-president and sales manager of Paper Merchants, Inc., and vice-president of the Fine Paper Division of the Paper Trade Association of Philadelphia, has just returned from attending a Sales Managers' Meeting of Hammermill Paper Company in Erie. Mr. Freile states that while in Erie they experienced an 18-inch fall of snow which resulted in a veritable blizzard, followed by rain and more rain, practically isolating Erie.

On Saturday, March 28, a delegation of sixty will entrain for the Scott Paper Company's plant at Chester, arriving at 10 a.m. At 10:15, they will be conducted through the mill, and at 12 o'clock a very delightful luncheon will be served. At 1:15 they will attend a meeting with Mr. Griscom as chairman, followed by a ten minutes' talk by Mr. McCurdy on "Quality." Mr. Pardee, of the Advertising Department, will speak on "Direct Mail Program starting April first." Mr. McCabe, president; and William Mohan, vice-president, will also address the gathering. The meeting will close with an interesting talk by Morgan H. Thomas, president of Garrett-Buchanan Company.

P. W. Mossman & Co., paper stock dealers, whose plant at 417 North 4th street, suffered a fire, is conducting business as usual from the rear of their former building, 418 North Oriana street.

Leonard T. Beale, president of the Pennsylvania Salt Manufacturing Company, has just been appointed to the Board of Directors of the Bell Telephone Company.

Howard W. Taylor, president of W. C. Hamilton & Sons, Inc., who died March 7, left a $50,000 estate in trust for his widow, Alice L. Taylor. In his will establishing the trust estate, the testator provided that the widow is to receive the income from the capital stock which he held and the entire income from his personal estate. Upon her death the estate is to go to children and grandchildren.

The Atlantic Paper Company announce the removal of their offices to the Public Ledger Building, Independent Square.

U. S. Envelope Co. Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Me., March 16, 1936—The annual meeting of the stockholders of the United States Envelope Company was held here last week, the following being elected: Treasurer, William O. Day of Springfield, Mass.; Clerk, Jed F. Fanning of this city; Directors, W. E. Swift, Waldo E. Buck of Worcester; Albert Hale of Boston; Ernest M. Whitcomb of Amherst; William O. Day of Springfield; E. V. Johnson of West Hartford; R. L. Allison, W. M. Wharfield of Longmeadow; T. E. Morris of Waukegan, Ill.; Frank B. Towne of Holyoke; Norman W. Wilson of Erie, Penn; and R. W. Crowell of West Springfield.

PAPER INDUSTRY OPPOSES STEAM POLLUTION BILLS

(Continued from page 17)

over whenever the Administration changes. Even were it possible to formulate programs of action under the terms of the bill, what is to prevent radical change with shifting of the Administrative personnel. Because of the large values at stake, surely consistent policies constitute a minimum demand.

No procedures are prescribed for the fixing of purity standards, for the establishment of minimum requirement of treatment processes or for the formulation of regulations as to the discharge into streams. Literally, the Natural Resource Committee is to be given arbitrary powers over municipalities and industries, which are fixed by the terms of the bill beyond any peradventure of doubt.

Serious Question as to Power

Actually, the Congress is asked to delegate its law-making power to the committee; in fact there is serious question as to whether the Congress is not being asked to delegate power that it does not possess.

Such a grant of authority smacks much of taxation without representation. In effect Senate Bill 3958 would force local government and industry to sign blank checks which may be filled in in any amount by a Federal agency and the payment enforced by law. Surely, such proposals cannot be seriously intended! But if they are, then certainly Sections 3, 4 and 5 of S. 3958 are mere words, for there is no provision or even implication that the results of the studies, cooperation or compacts provided for in these sections will be used as the basis of the rules or regulations.

Moreover, under such legislation what would happen to the jurisdiction of the States in this matter? By its terms the bill would extend Federal jurisdiction to every stream in the United States and Senate Bill 3959 would accomplish the same end with respect to coastal waters. Cooperation, State compacts and coordination of State effort, which are already possible under existing legislation, are outlined in the earlier sections of the bill, but the rights of the States or the continuation of State effort are not mentioned in the later sections. It is not difficult to believe that State effort would be seriously curtailed if not completely abandoned upon the passage of this bill, for it superimposes Federal jurisdiction with widely embracing powers over State jurisdictions and powers. Under such conditions can harmony be expected?

Obviously, Senate Bill 3958 can be considered only as a prohibition measure, and as such, if enacted, it can mean either that municipalities and industries must embark forthwith upon programs of huge expenditures for the installation of unknown processes, or that they will do nothing. State activities would necessarily have to be curtailed until the policies of the Natural Resource Committee were fixed.

No Such Drastic Legislation Necessary

No such drastic, far-reaching legislation is necessary to bring about in a reasonable, stepwise fashion either the application in industry of methods that are already known or the installation of sewage disposal plants by municipalities as their finances permit. In fact, such drastic legislation would discourage compliance as it has in the case of many other laws, some of them having to do with stream pollution. Under the best conditions enforcement is bound to be difficult until the proper solution of the whole problem is known; until a reasonable coordinated program is formulated; and until a high degree of voluntary compliance can be built up.

Voluntary compliance with severe laws, especially those dealing with matters that affect large numbers of people, is usually low; the Eighteenth Amendment and many traffic regulations are cases in point. Not the least important aspect of the stream pollution problem is to encourage voluntary compliance, and that cannot be done by drastic legislation.

In fact the processes of law must be integrated with the development of public need and of means of meeting that need. A home on the range "Where the buffalo roam and the deer and the antelope play" might be a delightful place, but such a spot cannot be created by law. Laws cannot restore the Last of the Mohicans to the shores of "Glimmerglass" or they cannot fill the heavens with carrier pigeons. All that law can accomplish is to create machinery for group action and to make effective the achievements of such group action.

Should Recognize Certain Fundamental Principles

Federal legislation, in respect to stream pollution, if new legislation is needed at the moment, should recognize certain fundamental principles among which are the following:

1. That the discharge of industrial and municipal wastes into streams has existed since the origin of the United States, that it has become a custom and is a necessity.

2. That the abrupt prohibition of this custom by legislation is impossible of enforcement.

3. That the ultimate solution of the problem involves the determination through research of the possibilities of waste disposal and utilization and the encouragement of application of methods as they are proven technically sound, economically feasible, and within the financial resources of communities and industries.

4. That the accomplishment of these purposes requires the thorough cooperation of every agency concerned; State, Federal, municipal and industrial.

5. That the enactment of coercive legislation is likely to discourage cooperation, resulting in a wide-spread lack of enforcement, thus delaying the ultimate solution of this great problem.

The paper and pulp industry holds that the proposed bills do not recognize these principles and it respectfully urges that the committee report adversely upon them.

In conclusion, it should be pointed out that there now exists in one of the great departments of the Government an agency that is fully capable and competent to assume the responsibilities of coordinating Federal and State activities and of directing a wide-spread cooperative study to determine the nature of the problem and the solution. I refer to the Public Health Service. To start these processes all that is necessary is to implement this agency with funds.

The Ritz Line of Bags and Wrapping

Schorsch & Co., Inc., manufacturers of paper bags, 500 East 133rd street, New York City, are sending out some extremely attractive samples of Ritz bags and wrapping. The company says that "the Ritz line, while retaining all the features of finest sulphate kraft, establishes in both color and appearance a radical departure from anything produced heretofore. Modern pastel shades, unusual striping and exceptional strength combine to make Ritz bags and wrapping paper a most outstanding line at attractive prices."

BOSTON PAPER TRADE ASSOCIATION CELEBRATES

(Continued from page 19)

mirable address. We have a very formidable association, which has stood the booms and depressions and now have as large a membership as ever, and all within the last five or six years." Referring to the "very enviable treasurer's report," he said it was only through the efficiency of treasurers, mentioning one of them by name, the late T. Harry Casey. He asked for a good attendance at the meetings, and said the success of this meeting was due to Mr. Main. "In behalf of the officers elected tonight, we will endeavor to give a good administration. I realize the social importance of this association." The meeting was adjourned after Mr. Tracy's expression of appreciation.

As a souvenir of the occasion, each member was presented with a handsome and costly solid brass match stand and ash receiver, appropriately inscribed with the dates, 1886 and 1936, the monogram and the name of the Boston Paper Trade Association. The cigars were in gold foil, with a cellophane wrapper bearing the name of the Association.

The Attendance

Those present included the following: Harold A. Allen, Ralph W. Allen, Lewis A. Alliger, George C. Andrew, John A. Andrew, John A. Andrew, Jr., Sumner B. Andrew, Paul M. Beach, Arthur F. Bell, E. D. Bement, Henry F. Bigelow, Graham Blandy, 2nd., Gorham Bliss, J. H. Brewer, Charles J. Brown, Wayne A. Brown, Joseph F. Burke, Arthur M. Burr, Charles A. Burrell, Matthew O. Byrne, James C. Campbell, R. H. Campbell, Hubert L. Carter, Ralph B. Case, T. Charles Casey, Howard E. Chase, Lewis L. Claflin, Nathan S. Clark, Ashley E. Crowell, E. Lindsey Cummings, Frank B. Cummings, Nelson Curtis, R. L. Day, Louis Dejonge, Charles H. Dodge, J. J. Dwyer, Robert W. Ely, Irving N. Esleeck, R. D. W. Ewing, Arthur F. Fay, Charles W. Fields, H. C. Fowler, Arthur W. Frank, Paul B. Fraser, Harry W. Gordon, Thomas Casey Greene, John R. Halkyard, H. C. Ham, Norman Harrower, C. W. Harvey, Allan I. Hatfield, Edgar P. Hay, Harold Hinckley, Arthur L. Hobson, John L. Hobson, F. J. L. Hoss, Everett F. Howarth, E. M. Hughes, Ralph Humes, Hartley A. Hurlburt, John E. A. Hussey, A. E. Kellner, John Kelley, Everett E. Ketcham, Fred B. Korbel, Joseph Levis, Herbert A. Lindenberg, Edward H. Little, Hubert W. Lockhart, Willard H. Loud, Malcolm B. Lowe, E. R. Lyman, M. L. Madden, Frederic W. Main, Oswald F. Marquardt, William J. McLellan, Aaron P. Mitchell, George Morrison, Horace A. Moses, George W. Mosher, John L. Munro, E. J. Murphy, Emmett Hay Naylor, Calvin H. Nealley, Charles W. Nelson, Clifford E. Newell, W. W. Newton, J. J. O,Brien, Robert Lincoln O'Brien, George Olmstead, Robert O'Neil, Kilby P. Osborn, Maurice A. Park, Eugene Peppard, Richard F. Piper, Leon M. Poore, W. Edwin Porter, Jr., Charles S. Proctor, H. S. Proctor, Lennox Ransom, Walter J. Raybold, Ernest S. Reid, C. E. Rice, John E. Roach, William Ross, William C. Ross, F. Henry Savage, Charles A. Shaw, Walter P. Simonds, M. Lincoln Simpson, Albert R. Smith, Donald R. Smith, William S. Smock, Joseph D. Snell, Harold G. Soule, Joseph D. Starr, W. N. Stetson, Jr., Julius Stille, Edward H. Stone, H. A. Stone, Jr., Robert M. Stone, George Stuhr, Edward J. Sullivan, Edward H. Sussenguth, Jesse G. Swift, J. Gilbert Swift, Jr., Royal P. Teele, Charles W. Townsend, F. Bendel Tracy, Glen Underwood, Harold C. Upham, John B. Van Horn, William Gardner Very, John W. Vivian, Robert H. Welsh, Mark H. Warren, K. H. Ways, C. Frederic Wellington, Ralph White, Frank H. Winter, E. L. Wood, Fred L. Wood, Emory W. Wright, P. D. Wyman, Charles A. Young, I. C. Young, Leon H. Young and John D. Zink.

Boston Paper Business Fairly Good

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 23, 1936—Business among paper wholesalers here during the last week was fairly good. A manufacturer's representative said that business was "fair to unfair," referring to competition, but "not so bad as it has been." Flood conditions in New England generally interfered with shipments from mills to jobbers. Practically all mills in Western Massachusetts were affected by the high waters. Virtually no shipments were made last week. As an instance, a jobber said that his company had received one shipment during the week. In the latter part of the period, at least, it was reported that none was available from Haverhill or Holyoke. Paper mills which are able to continue to operate are being besieged with orders.

Box board continued quiet, although the demand for picture puzzles and window displays made of box board was good.

Owing to water conditions, the paper stock trade is not shipping to any extent, because mills flooded with water are unable to operate and furthermore transportation would be seriously interfered with. Paper mills in Haverhill, reported to be the largest buyer, are not operating. There is little purchasing for immediate or prompt shipment. Railroad and truck shipments have been very much curtailed. Little change in quotations took place, although prices of some grades declined a few points. It is expected that values will be higher when conditions return to normal, because more or less paper stock has been damaged, so that it will not be fit to use until it is re-conditioned.

In old papers, mixed papers declined on the high side, making a range of .25 @ .32½ compared with a previous one of .25 @ .35. Old newspapers eased off to .32½ @ .35 from .37 @ .40, print manila to .50 @ .55 from .50 @ .60, corrugated boxes to .40 @ .45 and kraft corrugated boxes to .95 @ 1.00 from 1.00 @ 1.10. Bagging and new domestic rags remained steady at the same levels. In old domestic rags, No. 1 roofing stock declined to 2.00 @ 2.10 from 2.10 @ 2.15, the No. 2 grade advanced to 1.90 @ 1 95 from 1.85 @ 1.95 and No. 3 was quoted at 1.60 @ 1.70, compared with a flat 1.65. Under foreign rags, dark cottons declined to 1.85 @ 2.00 from 2.15 @ 2.35.

Albert T. Tennyson Dead

WASHI..GTON, D. C., March 18, 1936—Albert T. Tennyson, aged 58, salesman for the R. P. Andrews Paper Company, by which firm he had been employed for more than forty years died here at the Washington Sanitarium last Sunday after a brief illness.

Mr. Tennyson began work with the paper company February 28, 1896, as a messenger. At one time he was manager of the publication papers division. He was widely known in local graphic arts circles and among paper mill representatives throughout the country.

He belonged to the Acacia Lodge of Masons, the Washington Board of Trade and the Washington Typothetae. He is survived by his widow, his mother, a son, daughter and sister, all of this city.

PAPER MILLS SERIOUSLY DAMAGED BY FLOODS

(Continued from page 15)

fered more than $300,000 damage, when water over ten feet deep flooded the plant.

The Merrimac Paper Company, Lawrence, Mass., was forced to close for a few days.

Thousands of dollars' damage was caused at the Wheelwright Paper Company mill on the banks of the Nashua River at North Leominster. The Wheelwright mill was unable to operate for several days, but resumed production on Monday.

At Turners Falls, the Keith Paper Company and the Esleeck Manufacturing Company were flooded in parts of their mills and were down.

Strathmore Paper Company power plants at Woronoco and West Springfield were out of commission.

In Housatonic, the Rising Paper Company plant employees placed sandbags along the railroad tracks to prevent the river from overflowing on the highway. The machine shop, stock rooms and other places of the plant were under water, electric motors were removed and operations suspended. The high water flooded the rear yard of the mill property, in places four feet deep.

At West Groton, Hollingsworth and Vose Company were building sandbag walls to bar the rising waters of the Squannacook River which had already flooded the basement of the mill.

At Lawrence, the Champion-International Company, like other industries of that city, had flooded power plants, and water was even in the machine rooms, which were down.

Oxford Paper Mill Damaged

The damage to the Oxford Paper Company plant at Rumford, Me., was early estimated at over one million dollars. Later reports, however, show that this figure was exaggerated and that the flood damage actually is between $100,000 and $150,000. After being down for a week, operations at the plant were resumed yesterday, Wednesday.

The Otis dam of the International Paper Company at Livermore Falls, Me., gave way on Sunday, falling into the Androscoggin River.

The Pejepscot Paper Company plant was badly damaged and Hollingsworth & Whitney Company's big mills at Waterville were unable to operate most of the week, due to water in their boiler rooms.

Mills along the Penobscot like Eastern Manufacturing Company and the Penobscot Chemical Fibre Company were in a relatively better position and were running.

The Great Northern Paper Company mills at Madison were down, but Millinocket was entirely unaffected in so far as high water goes, though they naturally had shipping difficulties due to railroad conditions. Safety of the Great Northern Mills can be ascribed to their splendid system of dams, particularly the big Ripogenus dam which no doubt has been a factor in making flood conditions less serious throughout the Penobscot Valley.

The Ashuelot River had flooded the town of Hinsdale, N. H., closing all its tissue paper mills and doing heavy damage. At Bellows Falls, Vt. and Claremont, N. H., the mills were down as the Connecticut River rose to greater heights than in 1927.

Berlin, N. H., was entirely cut off from the world by washed out railroads and highways. Damage to the Brown Company mills is not definitely known. At Lincoln, the Parker-Young Company mill was cut off by flooded roads.

Schroon River Grinders Operating

Heavy rains of the past week and recent warm weather raised the waters of the rivers in the Warrensburg, N. Y., section and water wheels in factories are again humming. Four of the grinders at the Schroon River Pulp and Paper Company were placed in operation and the machines will remain in operation as long as there is sufficient water. The grinders produce about 30 tons of pulp every 24 hours. A supply of pulp will be manufactured for future use which will afford additional employment for men in the grinder rooms. The paper mill section will operate as usual.

At Rensselaer, the felt mills of F. C. Huyck & Co. were forced to suspend operations because of the swollen waters of the Hudson River. About 300 girl employees were forced to leave their positions and the large force of male employees were given the task of moving stock from the basement. The water, highest since 1913, was within inches of seeping through to the first floor, which is the wet and dry finishing room of the plant.

The J. P. Lewis Company mill at Beaver Falls is unaffected by the floods and deliveries are being made as usual.

West Virginia Conditions

West Virginia Pulp and Paper Company writes to the PAPER TRADE JOURNAL as follows:

"Our mills are located in the States of Pennsylvania, Maryland, Virginia and New York, and because of the unprecedented flood conditions in the eastern part of the country, we feel that you should know about our situation.

"Our mill at Tyrone, Pa., our mill at Williamsburg, Pa., and our Piedmont mill at Luke, Md., were affected, and we were forced to close down. We had high water at our Covington, Va. mill, also at our Mechanicsville, N. Y. mill, but we are happy to say that our Covington and Mechanicsville mills were not forced to shut down, and they are operating normally.

"At Luke, Md., where our coating mill is located, as well as the Piedmont paper mill, with seven paper machines, our entire coating mill is in full operation, and some of our paper machines, and we expect to have the rest of the mill in full operation not later than Monday of next week.

"We expect to have our Williamsburg mill in full operation not later than Monday or Tuesday of next week, and at least one-half of our Tyrone mill in operation by the middle of next week, and the rest of it shortly thereafter.

"We are pleased to state that we are in position to take care of all our shipments, due to the fact that our mills are located in different parts of the country, and we were therefore fortunate in not having them all down at one time, because of the present unusual conditions.

"We are also going to be able to make deliveries, provided the railroads are in position to handle freight, and we have every reason to believe that they will be."

It is generally conceded that damage to paper mills will run into many hundred thousands of dollars but it will be some time before accurate estimates are available.

Much new equipment, pulp, paper stock and other raw materials damaged by water, will be required and most of the machinery in the plants affected by the flood conditions will have to be cleaned and completely overhauled.

Newsprint Free Despite Overweight

The use to which imported newsprint is put, rather than the weight or measurements of the paper, is the gauge set up by the Customs Court in determining whether or not newsprint is entitled to free entry into the United States, according to a decision handed down in New York last week by the Second Division of the court.

The court held that forty-nine rolls of paper, imported more than a year ago by *The Christian Science Monitor* for its magazine section, were entitled to be admitted duty-free in spite of the fact that the paper weighed 1.22 pounds a ream more than the limits specified for newsprint by the Treasury Department. Judge Dallinger, who wrote the decision, in which Judges Tilson and Kincheloe concurred, pointed out that the heavier paper made possible a better grade of printing.

"It is unreasonable to assume," Judge Dallinger pointed out, "that Congress intended to prevent newspaper publishers from improving the quality of their papers, or to limit them to a certain weight of paper per ream, any more than to paper of a particular width."

Under the Tariff Act of 1930, and rulings issued by the Treasury Department, standard newsprint was defined as paper weighing thirty to thirty-five pounds to each 500 sheets twenty-four by thirty-six inches. The paper involved in *The Christian Science Monitor* importation weighed 36.22 pounds.

The decision reviewed testimony in the case, which showed a steady trend toward the use of heavier paper on the part of American newspaper publishers in recent years. Judge Dallinger also referred to a previous suit in which the Court of Customs and Patent Appeals had held that the fact that rolls of newsprint imported from Canada by a Midwest publisher were one-half inch narrower than the width specified by the Treasury Department did not affect the duty-free status of the paper so long as it was actually used for printing of a newspaper.

The court's decision sustains the complaint of the plaintiffs and orders return of duties exacted on the newsprint shipment by customs officials at Ogdensburg, N. Y.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 25, 1936—The Government Printing Office has received the following bids for 1,500 sheets of bristol board; R. P. Andrews Paper Company, at $28.80; Whitaker Paper Company, $29.10; Reese & Reese, Inc., $15.10; and J. R. Howarth Company, $26.00.

The following bids were also received for 1,500 sheets of paper cover stock; Japan Paper Company, $25.00 per ream and R. P. Andrews Paper Company, $29.00.

Carter, Rice Agents for New Blotter

BOSTON, Mass., March 23, 1936—Carter, Rice & Co., Corp., have been appointed agents for the "Reply-O" blotter, a new combination blotter and return post card. This style of mailing piece is rapidly arousing the enthusiasm of alert advertisers who demand inquiries, leads and orders at low cost. Carter, Rice & Co. will stock "Reply-O" blotter blanks from single to four-on for economical production on long runs.

Hayward Beatty Loses Daughter

Nancy Beatty, eight-year-old daughter of Hayward Beatty, manager of the Fine Paper Department of George W. Millar & Co., New York, passed away suddenly on Saturday, March 14.

National Paper Trade Cost Studies for 1935

Figures have just been released by The National Paper Trade Association showing a comparison of vital statistics in the Paper Distributing Trade for 1935 with those of 1934 and 1933.

Reports from approximately one hundred and fifty houses, covering nearly $100,000,000 sales have been analyzed and tabulated. Fine, Wrapping and Dual houses cooperated in the survey and the report is issued in three parts covering each class.

The reports as received were identified only by geographic territories and by centers of population in order that analysis of various zones and analysis of costs in various classes of cities might be made.

Not only do the reports show average sales, trading margins, overhead costs, etc., but they break down the cost to the major expense headings such as warehouse storage, warehouse handling, cartage, delivery, office, management, sales promotion and outside selling expense.

Among the pertinent figures given are average monthly sales, average order size, percent of warehouse business as compared with direct and indirect sales, together with the trading margins on the same. The selling expense is shown not only as a percent of total sales, but as a percent of gross trading margin and as a percent of total overhead.

Financial results—that is discounts given, discounts earned, bad debt losses, inventory losses, interest on borrowed capital, all are reflected in this report.

Merchants who have been studying their own overhead figures and their own audited reports for 1935 will be interested in comparing their rate of turnover, their costs, their trading margins, their average inventory, and other figures with the averages of the trade as a whole shown in this report.

From what we have been able to learn, no other wholesale trade does so complete a piece of work in cost analysis as that conducted by The National Paper Association and reflected in this survey report.

Newsprint in Switzerland

The bulk of the newsprint manufactured in Switzerland is turned out by four mills, according to a report from Consul General A. C. Frost, Zurich. Estimates place 1935 production at 41,000 metric tons, which is less than 70 per cent of the estimated capacity.

Formerly considerable quantities of newsprint paper were exported, chiefly to France. Import restrictions and inability to compete with manufacturers in foreign countries having a depreciated currency have now reduced exports to a practically negligible quantity. Last year 781 metric tons were imported into Switzerland, principally from Finland and Czechoslovakia. Exports, mostly to France, reached only 11 metric tons.

B. Attwood Approved Pulp Testing Chemist

The Joint Committee on Approved Pulp Testing Chemists for the Paper Industry announces that Fred B. Attwood of the Container Corporation of America, 900 N. Ogden street, Chicago, has been accepted as an approved paper and pulp mill testing chemist and is listed as such effective March 1, 1936.

Crescent Paper Co. Files in Indiana

INDIANAPOLIS, Ind., March 23, 1936—Officials of the Crescent Paper Company, Indianapolis, have filed papers with the Indiana secretary of state showing a capital stock of 3,000 shares common of no declared par value and 1,808 shares of preferred valued at $100 a share.

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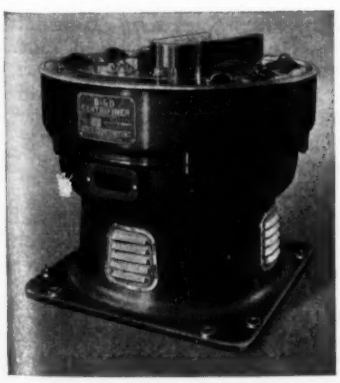

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Chicago, Ill.—The Container Corporation of America, Inc., 111 West Washington street, manufacturer of corrugated boxes and containers, is organizing a new company with other interests in the paper industry, in which it will hold a majority of stock, to construct and operate a new mill for the manufacture of kraft pulp and paperboard specialties, a new line of output for the container company. A site will be selected in the south in near future for the proposed new plant, which will comprise several large operating units and mechanical buildings. New mill will be equipped for large output and is reported to cost over $500,000, with equipment. As soon as plant is ready to operate, the container company will establish facilities for the manufacture of kraft paperboard boxes and containers, likewise a new branch of output, using stock from the new paperboard mill. Entire project will require a number of months for completion. Walter P. Paepcke is president.

Madison, Wis.—The Feldman Paper Box and Printing Company, 29 North Charter street, manufacturer of paper boxes and containers, has begun construction of a second story addition to plant, recently referred to in these columns, and will push work to early completion. It is reported to cost close to $30,000, with equipment. Modern Builders, Inc., 1420 Mound street, Madison, is general contractor. Balch & Lippert, Gay Building, Madison, are architects.

Long Island City, N. Y.—The National Container Corporation, Review avenue, manufacturer of paper boxes and containers, has arranged for change in company capitalization from 170,000 to 124,872 shares of stock, no par value.

Cleveland, Ohio—The National Sanitary Wiper Company, 4215 Trumbull avenue, manufacturer of shredded paper products for packing service, etc., has revised plans nearing completion for a new two-story addition to plant, 35 x 57 feet, and will proceed with construction in the spring. New unit will be used primarily for storage and distributing service, and space now used in present plant for such purpose will be given over to general production, providing considerable increase in present output. Entire project is reported to cost close to $25,000, with equipment.

Houston, Tex.—The Champion Paper and Fibre Company, Hamilton, Ohio, manufacturer of coated and other paper stocks, has awarded sub-contract to the Ingalls Iron Works Company, Birmingham, Ala., for about 2,000 tons of structural steel for steel frames for new mill buildings on Houston ship channel, near Houston, for large pulp mill, previously referred to in these columns. Other sub-contracts will be awarded at early date. Work has been started on site tests for building foundations, as well as a topographical survey or tract of land selected by company for plant. It will consist of several one and multi-story units, equipped for an initial output of about 150 tons of bleached and semi-bleached pulp per day. Superstructure work is scheduled to begin in the spring. General building contract was awarded recently to the Morton C. Tuttle Company, 31 St. James avenue, Boston, Mass. Entire project is estimated to cost about $3,500,000. J. E. Sirrine & Company, Greenville, S. C., are consulting engineers.

Brooklyn, N. Y.—The Central Carton Corporation, 245 Banker street, manufacturer of paper boxes and cartons, has filed notice of change of company name to Arr Jay Box Corporation.

Macon, Ga.—Fire recently damaged a portion of waste paper storage and distributing building of the Macon Iron and Paper Stock Company, 129 Walnut street. An official estimate of loss has not been announced. The structure will be rebuilt.

New York, N. Y.—Receivers of the United Paperboard Company, 171 Madison avenue, have been dismissed by the Court of Chancery, New Jersey, and company will resume operations under regulator control, covering its various mills in different parts of the country. William S. Stuhr and Sidney Mitchell have been acting as receivers for a number of months.

Coshocton, Ohio—The Muskingum Fiber Products Corporation, organized a few months ago by N. H. Carpenter, Coshocton, and associates, is said to have plans nearing completion for proposed new local mill for the production of strawboard products for corrugated box and container manufacture. A tract of about 65 acres of land has been acquired for plant, which will consist of a main one-story mill unit and several smaller structures. Plant will be equipped for large output and is reported to cost over $80,000, including machinery. Fred A. Jacobs, Coshocton, is architect.

Three Rivers, Que.—The Canadian International Paper Company, Beaver Hall Square Montreal, Que., has plans nearing completion for new addition to newsprint mill at Three Rivers. Bids will be asked on general contract at early date and construction is scheduled to begin in the spring. New unit will be one-story and is estimated to cost over $350,000, including equipment. S. K. LeBaron is company engineer, in charge.

Hamilton, Ont.—Kraft Containers, Ltd., Hamilton, has completed plans and is asking bids on general contract for new local plant on Cavell avenue, to be equipped for manufacture of kraft paper boxes, cartons and other containers. It will be one and two-story and basement, 120 x 470 feet, and is estimated to cost over $150,000, including machinery. New plant will be equipped for large output. Erection will be placed under way at early date. C. J. Muncie, 1015 Waterloo street, London, Ont., is architect and engineer, in charge.

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FUTURE MEETINGS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Summer International Meeting in Canada, August 3 to 7, Montreal, Quebec, The Saguenay. Details may be obtained from the secretary, R. G. Macdonald, 122 East 42nd street, New York.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS' ASSOCIATION, Annual convention, Grand Rapids, Mich., June 24-26, 1936.

NEW BIBLIOGRAPHY OF PAPER MAKING

Weidlein and Hamor, in their new book, "Glances at Industrial Research," in discussing the "bibliographic problems of research men," make the following comments: "The bibliographic problems of the industrial research man are much more complicated [than those of the man in the field of pure science]. He is expected to use his time to the best advantage. He must work in libraries that, as a rule, are not so thoroughly stocked as those of the universities, although this condition is being improved markedly. The literature of industrial science is more difficult to follow: the journals for both the technical and pure science must be examined; the patent literature must be much more carefully searched than in the case of pure science research; the publications of most interest to him will often contain veiled meanings, and finally, the things for which he is searching may have been done but never published."

The editorial discussion of the first Bibliography on Pulp and Paper Making (PAPER TRADE JOURNAL, February 27, 1930) carried the title "Knowledge + Research = A Successful Mill." In these days of keen economic competition this is just as true as in 1930. The need for a thorough knowledge of what has been done in a given field of science or industry is the first and a very essential step in any research problem.

Fortunately for the paper industry, the Technical Association of the Pulp and Paper Industry through its Committee on Abstracts and Bibliography, of which Dr. Clarence J. West is chairman, and with the cooperation of the Lockwood Trade Journal Company, has anticipated and filled this need for such a bibliographic work. In 1929 there appeared West's "Bibliography of Pulp and Paper Making, 1900-1928," a book of 982 pages. Since that time annual bibliographies have been published and now these have been assembled in one volume, covering the period 1928 to 1935 inclusive. Thus in two volumes, there is available the entire literature of paper making for a period of 35 years, during which it is believed that the most important advances have been made in the various aspects of the industry.

The new volume of the bibliography is more than a mere cumulation of the titles which appeared in the annual bibliographies, since the opportunity has been taken to add titles of pertinent books on the many topics related to paper making, a complete classified list of the over 250 *"Special Reports"* issued by TAPPI, and also many references to foreign trade magazines not previously available to the compiler.

Nor is the bibliography of value only to the research worker: the cost accountant will find reference to books and articles on his special field; the personnel manager, many citations to the relation of employer and employees; management will find much of interest under "Mill Management" and "Technical Control"; the sales department will be interested in the many references under the heading "Trade and Statistics," which is classified by countries; while for the power engineer there is a wealth of material under "Power," whether it be steam, electric or water power in which he is interested. These special uses show that the bibliography covers every phase of the industry.

As an indication of the amount of material contained in the volume, there are about 12,000 entries in the book, and over 5,600 names in the author index. The bibliography proper contains 760 pages of references, classified under more than 150 major headings.

In considering the value of such a compilation, it must not be forgotten that, unfortunately, most of the trade publications do not issue indexes and that, because of this, it is almost impossible to locate certain types of material except through bibliographies. Since references are given to abstracts published in such abstract journals as Chemical Abstracts, British Chemical Abstracts and the Technical Section of the PAPER TRADE JOURNAL, the bibliography is also a classified index of the material on paper making contained in such journals.

A disinterested evaluation of this work is found in Weidlein and Hamor's book, quoted at the opening of this editorial: "Among the most valuable bibliographies, or classified reference lists of literature, should be mentioned those of C. J. West, of the National Research Council. His "Bibliography of Bibliographies on Chemistry and Chemical Technology," . . . and "Bibliography of Pulp and Paper Making" are examples of some of the

important contributions he has made to the classification of ultimate sources of knowledge." President Heritage, of TAPPI, in his annual address this spring says, "We are particularly indebted to Dr. C. J. West for his special bibliographic work."

The second volume of the "Bibliography of Pulp and Paper Making," will be off the press about April 15, and may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, or from the Lockwood Trade Journal Company, 15 W. 47th street, New York. To those who have not secured the first volume, a special offer is being made of the two volumes for $15.00; the cost of the first volume is $10.00 and cost of the second volume shortly to be issued will be $8.00.

Old Continental Mill at Watertown Sold

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., March 23, 1936—Announcement is made of the purchase of the old mill property of the Continental Bag and Paper Company, idle for several years, by A. R. Baldick, prominent business man of this city. The mill had been owned for some time by System Properties, Inc., real estate holding company of the International Paper Company. It was learned that most of the equipment has been removed from the structure and only some scrap iron remains. Plans of the new owners call for tearing down the smaller buildings at the eastern section of the property and the materials will be sold. A structure with about 4,000 square feet will not be torn down but will be used for business purposes later. Last fall the International Paper Company announced plans for demolishing the property along with idle plants between here and Brownville to save on taxes but the contract for razing was never awarded. The property is assessed for $72,000. Negotiations for using the structure were carried on by a new industry during the winter but were dropped when the concern decided to locate at Dexter where specialty paper is being produced. The Continental mill stands on the site of the first great chain of Remington paper mills which was sold to the International Paper Company. Illustrious and Alfred D. Remington started business there in 1855.

After acquisition by the International it was operated more or less steadily until the winter of 1931 when it closed, never to reopen.

A. R. Graustein to Practice Law in New York

John W. Davis moved last week before the Appellate Division in New York for the admission of Archibald R. Graustein to the bar of the State of New York as a member of the bar of Massachusetts. The motion was referred, as customarily, to the committee on character and fitness, which will report back to the Appellate Division.

Mr. Graustein, who recently completed negotiations for new contracts between the Gatineau Power Company and the Province of Ontario, is winding up his work for the International Paper and Power system, having resigned all his offices recently, and is planning to open an office in the financial district in a few weeks. He was graduated from Harvard Law School in 1907 and served with the Boston law firm of Ropes, Gray, Boyden & Perkins until 1924, when he became president of the International Paper Company. He was admitted as a partner in the law firm in 1911.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Month	1936	1935	1934
January	76.1%	65.8%	.....
February	78.0%	70.0%	.....
March	.....	70.5%	.....
April	.....	70.0%	.....
May	.....	69.4%	.....
June	.....	72.3%	.....
July (b)	.....	67.8%	.....
August	.....	70.9%	.....
September (c)	.....	75.0%	59.4%
October	.....	75.6%	64.7%
November	.....	75.3%	61.7%
December (a)	.....	74.3%	62.1%
YEAR	.....	71.2%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1936		CORRESPONDING WEEKS, 1935	
*February 8	77.5%	February 9	69.5%
*February 15	77.1%	February 16	71.0%
*February 22	78.6%	February 23	69.2%
*February 29	78.8%	March 2	70.3%
*March 7	79.6%	March 9	69.6%
*March 14	73.3%	March 16	69.8%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Feb. 8, 1936	Feb. 15, 1936	Feb. 22, 1936	Feb. 29, 1936	Mar. 7, 1936	Mar. 14, 1936
0% to 50%	88	91	88	79	70	59
51% to 100%	255	249	251	258	257	174
Total Mills Reporting	343	340	339	337	327	233

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

1934	1935	1935	1935	1936
Sept. ... 62%	Jan. .. 61%	May .. 61%	Sept. . 69%	Jan. .. 61%
Oct. ... 63%	Feb. .. 67%	June . 65%	Oct. . 76%	
Nov. ... 56%	Mar. .. 67%	July .. 59%	Nov. . 70%	
Dec. (a) 53%	Apr. .. 61%	Aug. . 65%	Dec. . 60%	

Week ending Feb. 8, 1936... 66%	Week ending Feb. 29, 1936... 65%
Week ending Feb. 15, 1936... 66%	Week ending March 7, 1936.. 68%
Week ending Feb. 22, 1936... 66%	Week ending March 14, 1936.. 67%

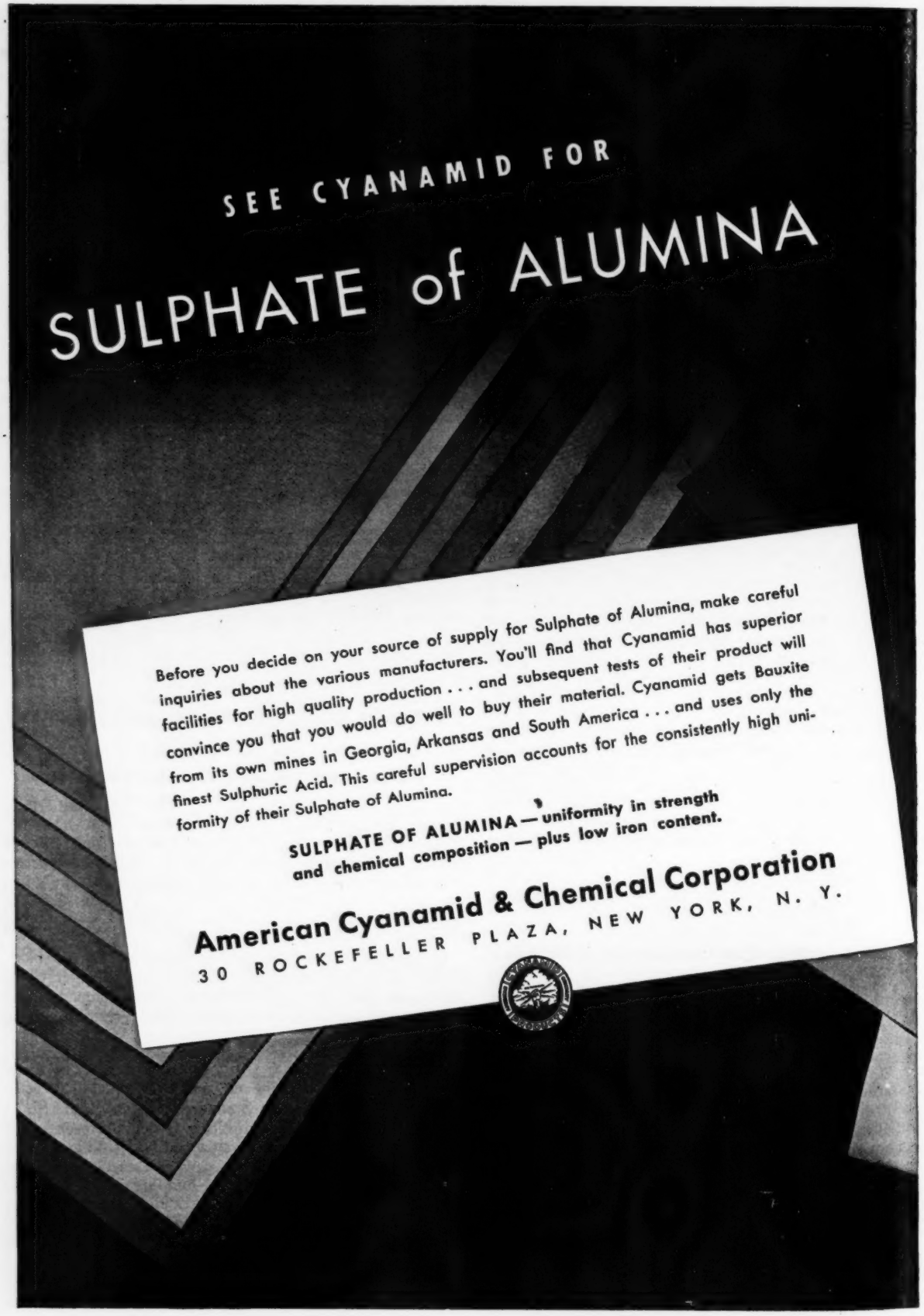
Sutherland Paper Co. Buys Property

KALAMAZOO, Mich., March 23, 1936—The Sutherland Paper Company has purchased the property known as the D'Arcy Spring works, located at Paterson and Pitcher streets, it was announced by Louis W. Sutherland, president of the company, following a meeting of the company's board of directors. The sale price was $25,000, and the site was acquired from Charles H. Schulz, receiver for the Bank of Kalamazoo.

In connection with the announcement of the purchase, L. W. Sutherland stated that the Sutherland Paper Company has made the addition because the company's increasing volume of business necessitated greater building space.

The main building on the Sutherland's newly acquired property contains 72,000 feet of floor space. The main building is about 20 years old, and it is situated directly across the street from the Standard division of the Sutherland Paper Company on North Pitcher street. The property also has a Pennsylvania railroad siding.

The Sutherland company already has started plans for extensively remodeling the main building. When ready, it will be used for manufacturing and storage purposes. It is expected that the building will be ready for occupancy in about 60 days. Three other buildings, adjacent to the main structure on the property, will be razed, it is announced.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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

The Chemical Nature of Lignin*

By Walter M. Fuchs[1]

Abstract

Lignin is distinguished as a characteristic constituent of plants. The evolutionary development of plants led to variations in the nature of the constituent lignin of different plants. Comments are made on the principal existing theories of lignin chemical composition and formulas are given. The relationship of lignin chemistry to commercial pulping processes are explained.

The cell walls of the higher vascular plants contain a peculiar substance which has been called lignin. Since hitherto no crystallized or otherwise undoubtedly uniform lignin has been isolated—even the existence of a distinct compound deserving the name lignin might well be doubted. There has accumulated, however, considerable evidence concerning the existence of lignin. This evidence, by means of which it is possible to distinguish lignin from other constituents of the cell wall of the plant, may be classified as follows:

1. The composition of wood and of the carbohydrates: It can be shown by calculation, that wood contains a component differing from carbohydrates in its much higher carbon content, its somewhat lower hydrogen content and its content of aromatic methoxyl groups. Even before isolation the composition of the lignin of wood in situ has been calculated by means of the rule of alligation *(6)* and was found to agree reasonably with isolated lignin preparations.

2. The breakdown of plant material: On acid hydrolysis of cell walls acid lignin remains which cannot be hydrolyzed to sugars. On treatment with alkali, the cellulose remains undissolved while lignin goes into solution to form the so-called alkali lignin. On treatment with bisulphite solutions lignin forms water-soluble lignosulphonic acids, while cellulose is not attacked.

3. Chemical composition: Lignin preparations contain generally more than 60 per cent carbon, while carbohydrates contain only about 45 per cent or less. Lignin contains phenolic methoxyl groups; carbohydrates contain no methoxyl groups at all, or only such groups which are loosely bound in the form of esters.

4. Chemical degradation: Provided the cell wall is freed from resins and waxes, lignin is the only substance which forms phenol carbonic acids and phenols, thus revealing, at least in part, an aromatic character.

5. Reaction with various phenols, alcohols (and mercaptans): Lignin gives, for instance, with methyl glycol or phenol in the presence of hydrochloric acid, very characteristic derivatives which are soluble in organic solvents.

6. Biological behavior: Lignin seems to be much more resistant against attack by micro-organisms than any other constituent of the cell wall. This phenomenon accounts for the accumulation of lignin in nature as observed in the processes of peat and coal formation *(11)*.

On the basis of all these experiences lignin has been differentiated as a sufficiently characteristic constituent of the plants.

Two questions arise here. The first concerns itself with the problem of whether lignin is the same throughout the vegetal kingdom, and the second concerns the uniformity of lignin as a substance when found in a single plant. As to the first question, it has been found that the lignin is different in different plants *(6)*. The lignin of lower plants contains either no methoxyl at all or only a small amount of methoxyl and does not give the same high amount of protocatechuic acid as for instance spruce lignin does on fusion with alkali. In studying different lignins we become aware of the fact that the lignins of the higher plants containing vascular bundles show some common features in that they possess a considerable content of ether methoxyl groups and are able to yield, on chemical breakdown, phenol carbonic acids. These properties vary in their numerical values from species to species *(10)* as shown in Table I.

TABLE I.—LIGNINS OF DIFFERENT PLANTS

	Marchantia polymorpha	Pteris aquilina	Lycopodium clavatum	Sequoia sp.	Picea sp.	Magnolia sp.
Per cent Lignin....	21.4	32.95	17.2	30.5	28.5	25.6
Per cent OCH_3 in lignin	...	5.5	7.9	14.6	15.4	17.0
Per cent protocatechuic acid by fusion of the lignin with alkali...	...	traces	11.0	not. det.	16.5	18.0

Types of Plants

The choice of plants for study of lignin as represented in Table I might seem rather arbitrary. It is therefore advisable to point out the results and considerations on which this selection is based.

The ability to form lignin of the type met with in the vascular plants was apparently acquired when the lower marine plants left the salt water and conquered the zones of brackish water and finally the land itself. In the course

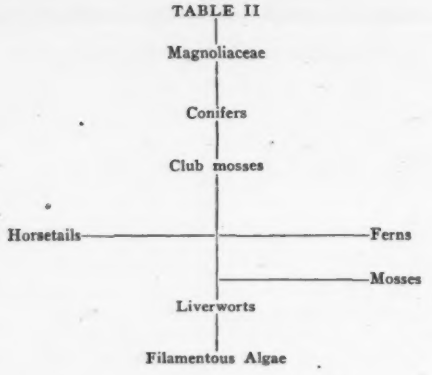
*Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

[1]Member TAPPI, Pennsylvania State College, State College, Pa.

of this evolution the plants developed a special economy of water and the walls of the vessels conducting water contain practically all the lignin present in the plants.

The lignins of vascular plants are specific and vary with the species; yet they are chemically related in the same degree as the species are related biologically. Choosing the plants for investigation according to their genetic relationship (Table II) we get an insight in the changes which appeared in the course of phylogeny.

TABLE II



The cell walls of the algae seem to contain in many cases practically carbohydrates only. Some algae and the mosses show as characteristic constituents of their cell walls, substances containing loosely bound methoxyl. Beginning with the club mosses we find that substances with loosely bound methoxyl have disappeared and have given way to substances with the characteristics of lignin of vascular plants.

Some instances might illustrate the applicability of these results of lignin research. It is known that the plants which gave rise to the bulk of raw material for the formation of bituminous coals became extinct in the course of time. Therefore many controversies arose among scientists as to whether those plants contained lignin at all or whether their bodies were built up mainly by cellulose. To decide this question we examined certain surviving relatives of those extinct plants. The examination of some species of Lycopodium as the only surviving relatives of the huge extinct Sigillariaceae and Lepidodendraceae provided an insight in the chemical nature of those plants not longer available for investigation. Club mosses of today have a type of lignin closely related to the lignin of spruce wood, but containing less methoxyl *(11)*.

Another application of the general results concerns the development of individual plants. The ontogeny or evolution of a single individual representative of a single species tries to recapitulate its phylogeny. That has been found to hold true for lignin. According to Fellenberg *(3)* in the course of development of some plants, a certain amount of loosely bound methoxyl can be found in the young plants while the older ones contain only aromatic methoxyl. According to Beckman, Liesche and Lehmann *(1)* growing rye plants contain a lignin with a methoxyl content of only 3-4 per cent, while in fully mature plants a lignin with nearly 14 per cent methoxyl was found. Sisido *(20)* divided a bamboo shoot 6 meters in length into three parts; the lignin content as well as the methoxyl content was found to increase considerably from top to bottom.

Quite recently, Phillips and Goss *(19a)* confirmed the results of Beckman, Liesche and Lehmann. They state: "The percentage of lignin, as well as the methoxyl in the lignin, increased in a regular manner as the (barley) plants developed and matured. The lignin from young plants differs from the lignin of mature plants in that the former contains a much smaller percentage of methoxyl. As the plants mature not only does the percentage of lignin increase, but there is also a rapid methylation of the hydroxyl group of the lignin." These results indicate that the lower plants originally did not contain any considerable amount of lignin. Later the lignin content becomes increased; but the young lignin contains a much lower methoxyl content than the lignin of the plants fully matured. This means that, in the course of phylogeny, first a lignin with a comparatively low methoxyl content was produced before the wood building higher plants formed a lignin of their own.

Lignin in Plant Not Uniform

The lignin as found in a single mature plant, originally by many workers was regarded as a uniform chemical combination. In the case of spruce lignin it became, however, clear that lignin is not uniform. Some results obtained by studying the lignosulphonic acids made it probable that there is more than one single lignin in spruce wood *(17)* and the study of the lignin derivatives which are soluble in organic solvents showed the presence of quite a number of components in spruce lignin *(12)*.

The following Table III might serve to illustrate the procedure in the case of phenol lignin from spruce wood *(14a)*. It might be added, that for instance methylglycol lignin can also be distributed in a number of fractions, by the use of chloroform instead of ethyl acetate.

TABLE III.—FRACTIONATION OF PHENOL LIGNIN
(The raw product is dissolved in alcohol and treated with activated carbon).

Solution				Residue
Concentrated, precipitated, precipitate treated with ether				
Insoluble in ether fraction 1		Soluble in ether fraction 2		Absorbed fraction 3
Fractions 1 and 2 extracted with ethylacetate				Successive extraction with various solvents: Fractions 3a, b, c.
Residue Fraction 1c	Solution The solutions shaken with a solution of sodium carbonate		Residue Trace	
Fr. 1a remains in ethyl acetate	Fr. 1b soluble in sodium carbonate	Fr. 2a remains in ethyl acetate	Fr. 2b soluble in sodium carbonate	
Fr. 1d separates out				

Thus we have to realize that lignin differs from species to species, that it is different in young and mature plants, and in any case, that it is a complex mixture. To make the matter still more complicated, it has been found that even various isolated lignin preparations, spruce wood lignins for instance, vary in their properties. This necessitated the development of a conception of genuine lignin different from that of lignin in the various forms of isolation *(6)*.

Plant Development

In order to understand the facts, it has proven helpful to consider the developmental history of the plants. For a still better understanding, we shall also consider briefly the developmental mechanics of lignin formation.

It has been established that the cell wall consists of various layers. The middle lamella, the primary wall and the secondary wall have been distinguished; and it has been found that the lignin is largely accumulated in the middle lamella. Kerr and Bailey *(17a)* define

(a) Middle lamella or intercellular material as the amorphous isotropic material largely, if not entirely, consisting of pectic compounds first deposited by the cytoplasm;

(b) Primary wall or cambial wall as the first anisotropic layer of the wall composed largely of cellulose and pectic

materials. (It is capable of growth and extension and has the capacity for undergoing reversible changes in thickness.)

(c) The secondary wall as the additional wall layers formed within the primary wall. Cells having secondary walls lose their potentiality for growth and enlargement.

Since lignin formation is effected in the living plant, it is to be considered a biochemical process. Before lignification starts the cell is alive and filled with protoplasm. As soon as lignification begins and proceeds, the vitality of the cell decreases, the protoplasmic activity ceases and the organic cell contents gradually disappear. Thus, while the beginning of lignification proceeds from the life process, its completion means the end of life to the lignified cells.

Among the fundamental life processes of assimilation and respiration, it is the latter which does not cease in declining vital activity. Respiratory enzymes survive the death of the cells and are able to do their work during and even after the decay of the protoplasm. The enzymes of respiration are able to affect combined as well as free oxygen; and respiration is that process the activity of which manifests itself the longest of all life processes. During declining protoplasmic activity the respiration processes do not pause, and the enzymes of respiration finally decompose the remaining cell content, mobilizing for the purpose oxygen of the cell wall constituents.

Chemical Constitution

In explaining the chemical side of the problem, I assumed in 1926 that the cell wall constituents present at the beginning of lignification are transformed by the loss of oxygen into unsaturated sugars of the glucal type. At that time unsaturated sugars were known only as products of the laboratory; since then, however, they have been found to be quite common in nature, as shown by the detection of ascorbic acid. Among the cell wall constituents undergoing the assumed change, I paid special attention to the pectins. The primary reduction products of the cell wall, resembling either glucal or ascorbic acid, may be easily transformed into phenols such as catechol and may undergo further changes, especially condensation which is, perhaps, connected with the changes in the pH of the cell content.

Independently, Ehrlich *(2a)* reached the conclusion that the pectins are to be regarded as an intermediate stage in lignin formation. According to his experiments and considerations, lignin formation is an enzymatic process changing pectins in such a way as to remove carbon dioxide, water, and oxygen from these original molecules.

Indeed, if we consider lignin formation as a biochemical process with enzymatic action involved, we can easily understand that lignin as a product of respiration represents a rather complex mixture, and is different from species to species in the same way as the enzymatic systems are specific with the species.

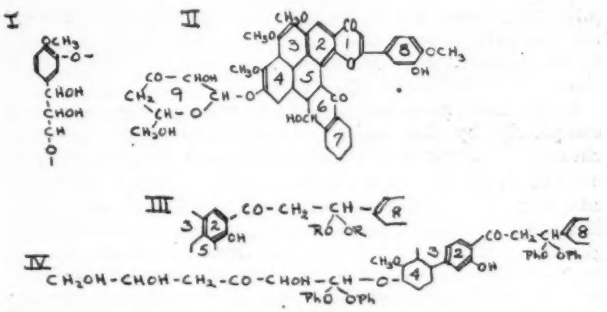
However, the practical chemist will not be satisfied with these theoretical aspects of the subject. He wants to have a formula representing a definite chemical constitution and he is quite justified in this demand, since a structural formula is not only the best way of summing up the knowledge of a substance, but is also helpful in all problems of practical utilization.

Various formulas of lignins have been suggested; it may be sufficient to deal with two of the proposed formulas.

According to Fruedenberg's *(5)* conception, lignin is a giant molecule entirely built up on units like Formula I, Table IV. Originally only linkages as indicated in this figure were assumed while later also other linkages comprising carbon linkages were taken into consideration. It may be mentioned that Klason *(18)* and others usually assumed the same building unit.

Since lignin is not uniform, a lignin formula cannot have the same meaning as in the case of uniform crystallized substances. Nevertheless, it seemed possible to me to represent the formula of an ideal hypothetical substance to which all chemical experience in the investigation of spruce lignin may be traced. Such a substance is represented in Formula II, Table IV. This compound would have the following properties:

TABLE IV



1. The formula is $C_{43}H_{42}O_{14}$, the molecular weight 782, the ultimate composition 66.0 per cent C., 5.3 H., and 28.7 O. The combination contains 15.9 per cent OCH_3. The oxygen functions comprise 4 methoxyl groups, 4 hydroxyl groups (one of them being phenolic in nature), 2 oxygen bridges and 3 cyclic keto groups. The average composition of spruce lignin complies with these properties; and it has been found, for instance, that lignin in wood as well as isolated lignin on treatment with diazomethane reacts like a phenol with one OH group in a molecule of 800 *(13)*.

2. The Formula II, Table IV, contains in its rings 1, 2 and 8, the flavon combination, ring 8 being a guaiacol radical. The compound can be expected to yield on cleavage with ring 8 about 20 per cent protocatechuic acid *(16)* and a variety of guaiacol derivatives, for instance, vanillic acid, eugenol, propylcatechol *(19)*. Ring 1 can be expected to give mono oxybenzoic acids such as o– or p–oxybenzoic acid, and mono–oxy polybenzoic acids. Such results have been obtained with lignin.

3. The rings 5, 2, 3, 4, and 6 represent a condensed system which can be expected to give on oxidation benzene carbonic acids. Such results have been indeed obtained with spruce lignin *(4)* and also with humic acids which were closely related to spruce lignin *(14)*.

4. Ring 7 can be expected to give on oxidation adipic acid and to undergo exhaustive bromination. Evidence for both was found in lignin research *(21, 12)*.

5. Ring 9 imparts to the combination the nature of glucoside in which the sugar is unsaturated. Therefore, the combination can be expected to be very sensitive against both alkalies and strong acids. This applies to lignin, too; and results obtained on treating wood with benzoyl peroxide point to the presence of an unsaturated sugar radical in lignin *(7)*. The same explanation might be applied to the fact that oxymethyl furfurol *(8)* and perhaps also to the fact, that formaldehyde has been obtained from lignin.

6. The formula offers also a possible explanation for the formation of certain lignin derivatives such as phenol lignins and alcohol or glycol lignins.

On treatment of wood with organic hydroxyl compounds, such as alcohols, glycols or phenols, in the presence of small amounts of catalysts such as hydrochloric

acid, lignin derivatives are formed which are easily soluble in various organic solvents and in alkali. It was shown in 1929 *(9)*, that the reaction most probably consists in opening an oxygen bridge like in ring 1, Formula II, and therefore the products may be represented by Formula III and IV, Table IV.

Relation to Pulp Manufacture

An important application of the formula is concerned with the process of pulp production. In principle, this consists in removing the lignin of the lignified tissues and leaving behind the cellulose as unchanged and undamaged as possible. To those familiar with the machinery of a pulp mill, it need not be emphasized how difficult a problem this has proven to be, and how stubbornly the lignin sticks to the lignified cell membrane in all the processes which have found industrial application.

It has been proposed to destroy the lignin more or less completely by the action of oxidizing agents such as chlorine or nitric acid. The mechanism involved may be derived from Formula II, as follows: Rings such as 8 and 9 are oxidized, some methyl alcohol is split off, ring 1 is opened, and ring 7 is broken up, giving rise to a COOH group. All this transforms the lignin molecule into an oxy–carbonic acid, the acidity being still further increased by the simultaneous introduction of N–containing groups and Cl–atoms, respectively. The increased acidity still further improves the solubility of the lignin thus transformed.

In the case of soda and sulphate pulp production, it seems quite sufficient to change the lignin only to such an extent as to render it soluble in alkali. This may be effected simply by breaking up the oxygen bridge of ring 1. As a matter of fact, few other changes seem to occur during that operation. Only complexes such as represented by ring 9 are liable to be split off, and such split products might cause in one way or another the blackening of the liquor.

In the production of soda and sulphate pulp, the desired effect is achieved by heating wood with alkaline solution under pressure at elevated temperatures. Since recent developments, the same effect is obtained much easier by treating the lignified fiber with organic hydroxyl compounds in the presence of an acid as a catalyst. Indeed, all the alkyl and aryl derivatives of lignin are soluble in dilute alkali with the greatest of ease. An especially striking example of that general possibility was published only a few months ago by Lemmel. According to Lemmel *(18a)*, it suffices to treat wood in the cold with ethyl acetoacetate and some HCl in order to effect complete solution of the lignin. No industrial applications of these new possibilities have been made, although from the scientific point of view, the reaction in question offers a new and highly promising way to produce pulp.

In the case of the sulphite process, an opening of an oxygen bridge as suggested for ring 1 is now being considered by various workers. According to Hägglund *(15a)*, two different stages of the process are to be recognized; first, formation of a solid lignosulphonic acid containing a carbohydrate complex; secondly, hydrolysis of that acid into a carbohydrate and the water soluble lignosulphonic acid. While these statements obviously may be easily reconciled with the conceptions represented by Formula II, they do not seem to contain a sufficient explanation for a most characteristic feature of the process, that is, the loosely or "reversibly" bound sulphur dioxide. Starting with Formula II, we may assume breaking up of ring 1 and addition of bisulphite to the carbonyl groups of the formula as a first step, then splitting off complexes such as ring 9 as a second step, while the final action promoting solution may consist of phenol hydroxyls reacting in their tautomeric form as CH_2–CO groups, thus giving rise to bisulphite addition products of sulphonic acids. This latter conception has met with certain objections, but certainly has stimulated research in the past and will be useful for the same purpose in the future.

Waste Liquor Products

The waste liquors containing lignin have caused and are causing much annoyance. Moreover, the industrial production of sugar and alcohol from wood necessarily will still increase the amount of lignin to be disposed of. At the present time, we have to admit that large scale utilization of lignin in industrial practice most probably will be possible only after a better knowledge of the constitution of lignin has been reached by purely scientific research. Some of the possibilities, however, offering themselves may be mentioned.

The sugar contained in sulphite waste liquor has been transformed into alcohol by fermentation and the lignosulphonic acids have been converted into tanning materials, and adhesives, or have been utilized in the preparation of special valuable combinations such as vanillin. Concentrated sulphite waste liquor has been successfully utilized in the maintenance of roads, and also in the fields of ceramics and foundry. The lignin contained in black liquors or sulphite waste liquors may be precipitated by means of CO_2 or lime, respectively. These and other lignin preparations represent a cheap and promising raw material for producing artificial resins and plastics. Insoluble lignins may be utilized as filling materials in connection with plastics, road and house building materials, while soluble lignins may be applied to serve as emulsifiers, stabilizers or carriers, for instance, in connections with fungicides and insecticides. Another item to be mentioned is the utilization of lignin as a starting material for activated carbon or for fertilizers. Special attention might be called to the fact that preparations such as alkyl and aryl lignins, because of their solubility in organic solvents, represent a material of higher value than any other lignin preparation, and should prove useful in the whole field of lacquers, varnishes, resins and plastics; also, their properties as lyophobic, organophilic colloids suggest definite applications. Certainly, research work on lignin should be carried on with broad scientific aspects since this seems to be the best way to utilize the wood in the time to come better than it was possible in the past.

Literature Cited

(1) Beckman, Liesche, Lehmann, *Biochem, Ztschr.*, 130, 491 (1929).
(2) Brauns, Hibbert, *J. Amer. Chem. Soc.*, 55, 4720 (1933).
(2a) Ehrlich, *Cellulosechemie*, 11, 161 (1930).
(3) Fellenberg, Biochem, *Ztschr.*, 85, 118 (1918).
(4) Fischer, Schrader, *Ges. Abh. z. Kenntn. d. Kohle* 5, 221 (1920); 6, 1 (1921).
(5) Freudenberg, "Tannin, Cellulose, Lignin," Berlin (1934).
(6) Fuchs, "Die Chemie des Lignins," Berlin (1926).
(7) Fuchs, *Ber. Deutsch. Chem. Ges.*, 60, 776, 1327 (1927).
(8) Fuchs, *Ber. Deutsch. Chem. Ges.*, 60, 957, 1131 (1927).
(9) Fuchs, *Ber. Dtsch. Chem. Ges.*, 62, 2125 (1929).
(10) Fuchs, "Methoden der Ligninforschung, Abderhaldens Methoden," Wien-Berlin (1929).
(11) Fuchs, "Die Chemie der Kohle," Berlin (1931).
(12) Fuchs, *Ztschr. angew. chemie* 44, 111 (1931).
(13) Fuchs, Horn, *Ber. Dtsch. Chem. Ges.*, 62, 1691 (1929).
(14) Fuchs, Stengel, *Liebig Ann.*, 478, 267 (1930).
(14a) Fuchs, unpublished investigations.
(15) Hägglund, Urban, *Cellulosechemie* 8, 69 (1927).
(15a) Hägglund, *Cellulosechemie* 13, 139 (1932).
(16) Hönig, Fuchs, *Monatsh. f. Chemie* 40, 341 (1919).
(17) Hönig, Spitzer, *Monatsch. f. Chemie* 39, 1 (1917).
(17a) Kerr, Bayley, *J. Arnold Arbor*, 15, 327 (1934).
(18) Klason, *Cellulosechemie* 13, 113 (1932).
(18a) Lemmel, *C. A.* 29, 7071 (1935).
(19) Phillips, *Science* 73, 568 (1931).
(19a) Phillips, Goss, *J. Agr. Research* 51, 301 (1935).
(20) Sisido, *Chem. Abstr.* 25 5983 (1931).
(21) Tropsch, *Ges. Abh. Z. Kenntn. d. Kohle* 6, 271 (1923).
(22) Wedekind, Engel, Storch, Tauber, *Cellulosechemie* 12, 163 (1931).

The Control of Moisture-Content In Paper Undergoing the Process of Progressive Drying*

By Joseph A. Sheehan[1]

Abstract

The author explains a new method of determining and controlling the amount of moisture in paper as it leaves the drying process.

It is based on the fact that after a certain stage of drying has been reached, the increasing sheet temperature is a function of decreasing moisture content.

The rate of evaporation during the various stages of drying is visualized by means of curves. Typical graphical records of moisture content as determined by this method are also shown.

This paper aims to describe a simple and accurate method of moisture determination in paper during its manufacture and a means to control it. You are familiar with the cost required to force water into the capillary tubes of the fibers by the use of hydrating equipment such as beaters and jordans. You know what it costs to boil it out of the sheet on the driers. You also know that if there is less than the desirable quantity in the finished paper that you are undoing to some extent that which has been accomplished by the beaters and jordans. Also, if the paper is overdried, you are virtually donating to the buyer of your product extra weight of fiber; valuable to you, but not necessarily to him and such paper is more liable to warp and crack, have less strength, more static and a poorer finish. To keep on the safe side, paper is usually overdried because it is a difficult task to maintain uniform moisture-content as can be appreciated when one considers,

a.) The difficulty of accurately and continuously measuring the results at the end of the process.

b.) The inherent inertia of the large mass of metal in paper-machine driers which introduces a considerable time-lag between a change in heat supply and its effect upon the paper.

In search of a procedure that would solve the first part of this problem, temperatures of the sheet were taken as it passed over the driers, by means of portable thermo-couples which had hot junctions that were shielded from external influences and compensated cold junctions. As temperature readings were taken, samples were simultaneously cut from the sheet, placed in air-tight jars and the moisture-content determined in the conventional manner. The curves shown in Fig. 1 are the results of the plotted values. After making a number of such tests it was found that the amount of moisture contained in the paper has a definite relationship to the sheet-temperature after its sub-critical point is reached. This relationship is based on the behavior of water in the presence of heat and follows definite physical laws. To more easily understand the principle employed it will be helpful to proceed through the drying stages in their sequence as shown in Fig. 1. It will be noted that the temperature curve is comprised of four distinct steps.

Between points A and B of the curve the temperature rises rapidly during which time heat is supplied to the water in the sheet to raise it to the boiling point under the prevailing vapor-pressure. During the rise in temperature, moisture leaves the surfaces of the paper at a rate proportionate to the differential of pressure between the vapor in the sheet and that of the atmosphere in contact with it.

Between the points B and C of the curve, the temperature remains stationary for a considerable period of time because the boiling point has been reached and because the rate of heat-flow from the sheet nearly equals the supply. During this stage, a large amount of heat, known as the latent heat of vaporization, is absorbed from the driers to support rapid evaporation of "vehicle" moisture.

It is at point D in the process that the sheet attains what we have termed its critical temperature. As drying progresses between points D and E, the moisture in the sheet continues to evaporate but at a diminishing rate because of the increased resistance to the flow of heat into and from the paper resulting in higher internal temperature.

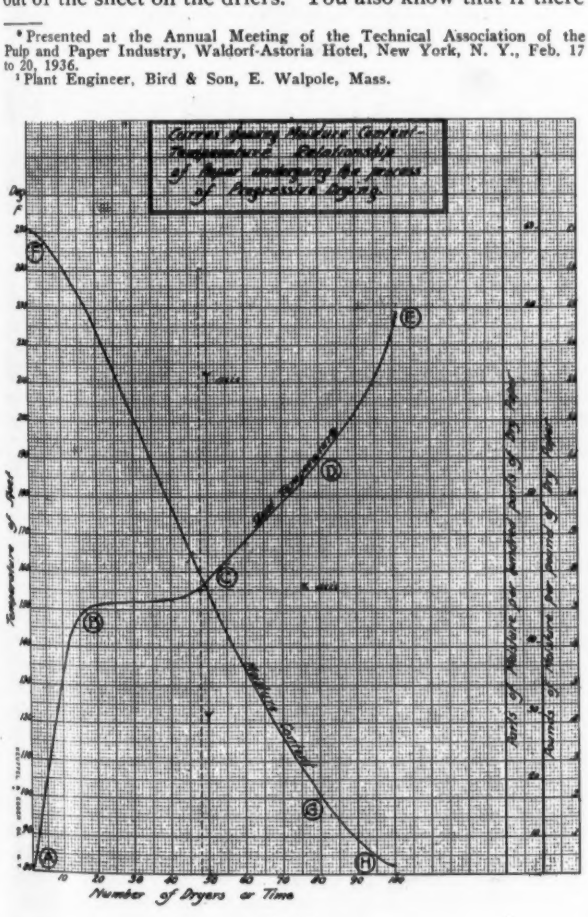


FIG. 1

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

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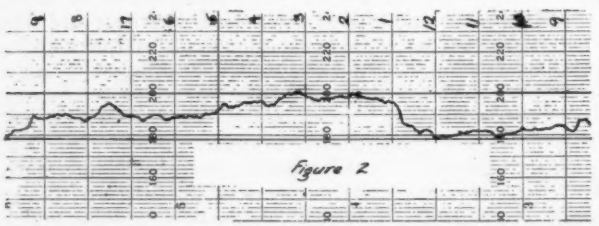
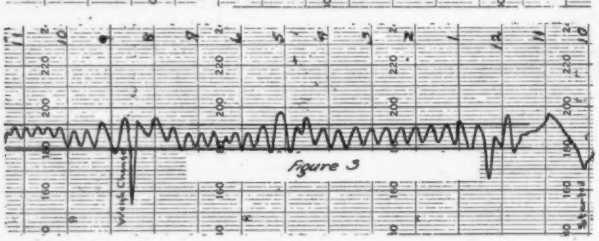
For values between point C and the oven-dry point the increasing sheet temperature is a function of the decreasing moisture-content between points C and H. This law applies to any progressive drying operation and when temperatures are expressed by values on the Y axis and moisture-content by values on the x axis it will be found that for a particular drying operation the prevailing temperature represents a quantitative measurement of the moisture-content in the product under consideration.

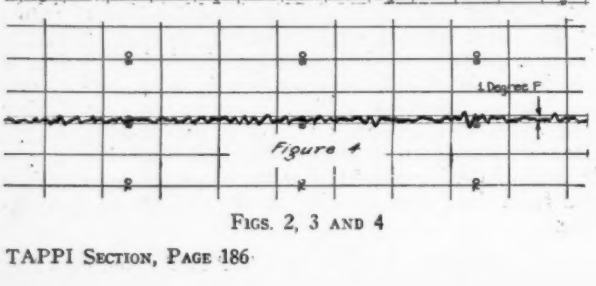
Curves can be developed for drying a given paper at a given speed on a given paper-machine when several sets of values are once obtained by test so that future runs can be duplicated. Values of the curve will not be identical for the same paper on different paper-machines but the form is characteristic of all such drying processes.

Many variables occur when drying paper such as changes in basis-weight, initial moisture-content, freeness, speed of the sheet, bulk, heat-supply, atmospheric conditions, etc. A moisture-control system to be successful must instantly evaluate the effect of all of these influences, some of which are concurrent, and be able to adjust the flow of heat to the driers in the proper amount and at the correct rate. When the large thermal-lag of the paper-machine is also considered it is obvious that the control problem becomes very complex and requires equipment of the highest order to meet it successfully.

Using the sheet-temperature method as a measure of moisture-content, some typical results of paper-machine performance have been graphically recorded. With manual control and with some types of automatic control it was observed that the moisture-content curve had no characteristic form and drifted considerably from the desired setting as shown in Fig. 2. With other types of automatic control as shown in Fig. 3, the moisture-content curve obtained had a sine-wave form and even very small changes in moisture-content caused large changes in steam flow to the driers with consequent cyclical disturbances in the regulation of steam-pressure, machine-speed, surges in the evacuation of condensate from driers, variation of speed of prime-movers and voltage-variation. The higher the heat-head the greater was the amplitude of deviation from the desired moisture-content setting.







FIGS. 2, 3 AND 4

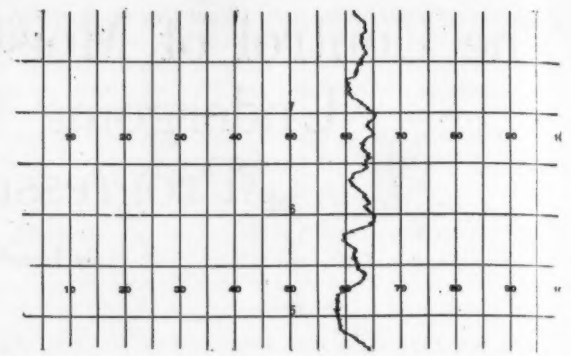


FIGURE 5 A RECORD OF MOISTURE CONTENT OF PAPER BEFORE AUTOMATIC CONTROL WAS INSTALLED

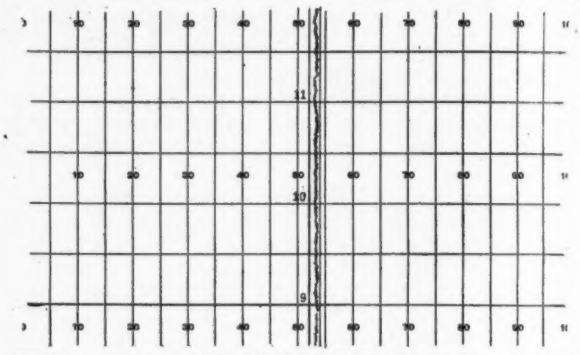


FIGURE 6 A RECORD OF MOISTURE CONTENT OF PAPER WITH AUTOMATIC CONTROL IN OPERATION.

FIGS. 5 AND 6

The ideal control should give results as shown by the moisture-content curve in Fig. 4. The temperature should be held within limits of 0.5 deg. F. plus and minus of the desired setting and this should correspond to approximately 0.2 per cent moisture-content.

The sheet-temperature must be first measured by a sensitive electric thermometer having an extremely small heat capacity. The temperature impulse thus obtained must be communicated to a control unit that takes into account three important factors in the drying process; the steam-flow into the driers, the instantaneous value of the sheet-temperature and the rate at which this temperature is changing.

Such a unit is essentially a steam-flow controller which acts to maintain a ratio between the flow of steam into the driers and the moisture-content of the sheet. This ratio is automatically varied in accordance with the amount and rate of deviation of the sheet-temperature from the point set by the operator. In this way stability of operation can be secured without sacrificing any speed of correction required to take care of sudden variations of moisture-content which frequently occur.

The control action must not be throttled or limited but must operate over the full range of steam-supply, so that it immediately compensates for normal changes in basis-weight, machine-speed, etc., without requiring manual readjustment. It must be entirely free from "hunting" or "cycling" and, although rugged in design, it must be extremely sensitive and fast, to correct changes in moisture-content of the sheet. This is evidenced by the fact that the temperature "feeler" is located at the end of the drying process where one is most interested in moisture-content. See Figs. 5 and 6, which show records of drying on a

board-machine before and after automatic regulation was installed. A graphic record is drawn to show if the proper moisture-content is being constantly maintained, paper-breaks, the duration of shutdowns, etc. In this particular installation the machine-tender is relieved, in case of a paper-break, as the temperature-feeler comes in contact with the drier surface preventing the steam-valve from opening wide to cause overheating of the driers, and he can, if necessary, by means of a hand-lever, set the steam-valve to any desired position.

Some materials, such as roofing and flooring felts require a low final-moisture-content to properly process them in hot saturants. Likewise, it is necessary to adequately dry paper that must be combined into board so that adhesives can be applied rapidly and effectively. Low final moisture-content can be safely obtained provided the ultimate sheet-temperature is under control. Generally speaking, if the desired final temperature of any grade of paper is greatly exceeded it is possible, due to the sheet-structure, for an appreciable pressure to exist in and between the fibres so that violent ebullition ensues within the sheet, to weaken the fibre-bond and make it difficult to produce a high-quality product.

So that desired results can be obtained on each run a practical method is to supply the papermaker with a specification card which he would follow and which would contain the following data:

Grade of Paper	Weight	Caliper	Paper Speed	Dried Sheet Temp.	Moisture Content
.....	.....	.....	.....	.....	.....

From an overall plant heat balance aspect, greatest thermal economy can be obtained when drying is done at temperatures of less than 212 deg. F., which is the boiling point of water under an atmospheric-pressure of 14.7 pounds absolute. Whether the cost of equipment necessary to make it possible to do so can be justified is a question that each plant must answer for itself.

Curves like those described in this paper serve another useful purpose in that they make it easy to visualize the rate of evaporation over the paper-machine as a whole. Analysis of such curves makes it easy to determine where heat or ventilation can be most effectively applied. For example, assume that the paper being dried can stand a rapid application of heat in the early stages of drying. If it is found that the slope of its temperature-curve between points A and B is not steep enough and if the section B and C extends over a prolonged period it might be advisable to raise the heat-head in a number of driers in the first drying stage. Further, it would undoubtedly prove profitable to blow efficiently heated "vapor-absorption air" at high velocity over the sheet between driers which correspond to section B and C of the curve under consideration. This would reduce the vapor-concentration and at the same time reduce the boiling point so that a higher rate of drying would prevail. As previously stated, as long as the ultimate sheet-temperature is controlled, advantage can be taken of maximum production and quality is assured.

To conclude, we believe the temperature determination and control method to be a marked advance in the science of drying, worthy of serious consideration in the interest of high quality and lowest drying costs.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Miscellaneous Digesting Processes

Process for the Cooking of Wood and other Materials Containing Cellulose. Metallgesellschaft Akt. Ges., Frankfurt a.M. Ger. pat. 611,226 (February 19, 1933).—The idea of the invention is to drench the materials with the cooking liquids as quickly as possible and this is accomplished by subjecting the material to a vacuum.—J. F. O.

Testing Wood from Which the Rosin Has Been Removed, for its Use in the Manufacture of Board. E. Munds. Wochbl. Papierfabr. 66, No. 26: 493-95 (June 29, 1935).—Wood from which the rosin has been removed can be cooked without further treatment by any of the common processes; but the resulting product is not worth the cost. Methods were then tried out to cheapen this treatment; such as keeping the wood in contact with cold water for 72 hours and then defibering it in a kollergang and beater; or the wood is steamed for 2½ hours and then defibered. Details of the methods and the results are tabulated. The authors believe that the results warrants a trial on a commercial scale.—J. F. O.

Pre-treating Drenching Process for Pulp. K. Y. Kylander, Helsingfors. Finn. pat. 16,185 (June 27, 1933).—Before the real cooking, the wood is subjected to a pre-treatment with acetates or phosphates to which sodium hydroxide or acetic acid is added, or with alkaline gases (ammonia) or acid gases (acetic acid) in order to avoid a "black cook." By this pre-treatment, the fatty and resinic materials in the wood which causes hyper-acidity or hyper-alkalinity are neutralized in its capillaries and the diffusion thus regulated.—J. F. O.

Process and Apparatus for Delignification. Walter G. Scharmann and Fredrich Olson assignors to The Cellulose Research Corp. U. S. pat. 2,007,348 (July 9, 1935).—Wood chips are subjected to an "explosion" process to convert them into a moss-like material consisting of individual fibers or small fiber-bundles, and is then passed continuously through a series of digesters through which cooking liquor is passed continuously in counter current—A. P.-C.

Process for the Digestion of Vegetable Growths to Produce Cellulose. Herman B. Kipper. U. S. pat. 2,005,190 (June 18, 1935).—The material is treated in a digester such as described in Kipper's U. S. pat. 1,820,276, of Aug. 25, 1931, with nitric acid and benzol that have been mixed in a "turbo mixer."—A. P.-C.

Pulping Process. Elis Olsson. U. S. pat. 2,006,559, (July 2, 1935).—Fibrous material is digested at high pressure and is discharged under pressure or blown di-

rectly from the digester into a mechanical grinding apparatus, so that it is forced between the grinding elements. —A. P. -C.

Manufacture of Cellulose or Cellulosic Material. Henry Dreyfus. U. S. pat. 2,003,347 (June 4, 1935).—Cellulosic material such as spruce groundwood is treated at 120° to 180° C. with an aqueous solution of a diolefine glycol (preferably diethylene glycol) to separate the lignin from the cellulose.—A. P. -C.

Pulping of Fibrous and Cellular Materials. De la Roza Corp. Brit. pat. 428,120 (Sept. 21, 1934).—A continuous digester is described, which consists of an outer stationary horizontal cylindrical vessel, and inner rotating perforated vessel. The raw material, which has been previously soaked in the cooking liquor, is continuously fed by means of a plunger pump into the perforated vessel under pressure through a tapered inlet passage which is narrower than the vessel. Thus, since the density of the stock in the passage is considerably greater than in the vessel, it acts as a valve. Automatic control is maintained of the rate of circulation of cooking liquor between the outer vessel and a heat exchanger, the temperature of the liquor and the rate of charging and discharging the pulp. —A. P. -C.

Cellulose or Semicellulose. Hofasto A. G. Fr. pat. 778,163 (March 11, 1935).—Wood pulp is washed with water until the pulp is completely free from fiber waste and fibrous mud and is then treated with chemical agents to produce cellulose or semicellulose.—A. P. -C.

Beating

Resumé of Recent Literature on Hydration Theories and Associated Phenomena. F. A. Simmonds. Technical Association Papers 18:455-459 (1935); Paper Trade J. 101, No. 3:35-39 (July 18, 1935).—A review with bibliography of 35 references.—A. P. -C.

Is the Beater Obsolete? J. A. Hamm. Technical Association Papers 18:417-420 (1935); Paper Trade J. 100, No. 25:47-50 (June 20, 1935).—A discussion of the defects of the hollander beater showing how they have been overcome in the "Barnacle Bill" beater constructed by the Shartle Bros. Machine Co., Middletown, O.—A. P. -C.

Beating Versus Iordaning in Paper Making. R. D. Kehoe. Technical Association Papers 18:411-417 (1935); Paper Trade J. 100, No. 25:41-47 (June 20, 1935).—A discussion showing that it has not been possible to equal the paper making qualities obtainable from properly operated beaters by the use of high or low speed jordans or refiners, except for certain special papers that require short fibers.—A. P. -C.

Departure from Standard Beating Principles. R. M. Radsch. Paper Mill 58, No. 9:16-19 (March 2, 1935).—A description of the design, operation, performance and merits of the Vortex Beater, built by Appleton Machine Co., Appleton, Wis.—A. P. -C.

Beater or Several Jordans Hooked Up in Series. Zellstoff Papier 15, No. 3:97-98 (March, 1935).—The time factor, power and the strength results of the stock after treatment in beaters and or jordans are tabulated and discussed.—J. F. O.

The Fastening of the Knives on the Roll of a Beater. L. Wochbl. Papierfabr. 66, No. 15:283-285 (April 13, 1935).—After discussing the causes for the knives breaking loose from the beater roll, the author shows how such may be eliminated and gives the calculations used in arriving at his results.—J. F. O.

Apparatus for the Manufacture of Paper Pulp. E. & M. Lamort Fils. Brit. pat. 426,096 (March 27, 1935).—Pulp is made from cellulose sheets, wood pulp sheets, paper waster, etc., by apparatus comprising at least two agitators rotating about substantially parallel axes, and contained in a perforated chamber within a tank maintained filled with liquid; paper pulp passes through the perforations into, and is drawn off from, the space between the chamber and the tank.—A. P. -C.

Beater. J. M. Voith Co. Fr. pat. 783,920 (Jan. 8, 1935).—The stock is fed in a narrow strip at one end of the beater roll. On leaving the roll it is brought back directly thereto by as short a path as possible, and at a point adjacent to the point at which fresh stock is being fed. This is continued until the stock reaches the other end of the roll where it is discharged from the machine after having followed an approximately helicoidal path. Guiding boards are provided at the ends of the roll to direct the stream of stock, and the number of times that the stock passes between the roll and bedplate is regulated by adjusting the width of the band fed to the roll and the inclination of the guiding boards.—A. P. -C.

Paper Pulp Beaters. E. & M. Lamort Fils. Brit. pat. 422,875 (Jan. 21, 1935).—In a hollander for the manufacture of paper pulp, which is continuously charged with raw materials while continuously discharging sufficiently treated pulp and which comprises an endless main channel and a by-pass channel, so that materials may at one point in their circulation either continue traversing the main channel or may traverse the by-pass channel, disintegrated materials extracted from the main channel are passed through the by-pass channel and sufficiently treated pulp is removed from circulation in the by-pass channel.—A. P. -C.

Mechanical Treatment of Paper Pulp. Ateliers Neyret Beylier. Brit. pat. 422,680 (Jan. 16, 1935).—In an apparatus for grinding, refining and hydrating fibers of wood, cotton, flax, hemp, etc., thick pulp is compressed repeatedly between two rollers rotating at high speed, the pulp being violently dried and disheveled by the water driven through it by the rollers.—A. P. -C.

Process for Making Beater Furnish. Earl P. Stevenson and Howard J. Billings assignors to The Richardson Co. Brit. pat. 424,098 (Feb. 14, 1935).—Material suitable for furnishing a beater is prepared by adding to a moist mass of fiber, *e.g.*, sulphate, sulphite or soda pulp, rag stock, asbestos or textile fibers, ingredients that form a resin when heated in the presence of a catalyst, heating the mixture while maintaining mechanical mixing and then rapidly dropping the temperature to stop the reaction while the resin is still in a heat-fusible state, preferably by adding cold water to the mixture. In an example, unbleached sulphite pulp is mixed with water; soda ash, cresylic acid, formalin and ammonia are added in turn and the final mixture is heated and mixed with cold water. Calcium stearate may be added to the mixture to cause the final product to separate readily from molds. Plasticizers, *e.g.*, dibutyl phthalate, may be added. Paper and boards made from the products may be used in the manufacture of laminated products, shaped and drawn articles, in the fabrication of decorated panels for table tops, etc.—A. P. -C.

Plug Structures for Jordan Engines. Christian C. Riehm. U. S. pat. 2,008,228 (July 16, 1935).—The invention provides a demountable filler for a jordan plug, which can be entirely constructed in a machine shop and is quickly and easily mounted at the mill on the jordan plug by unskilled labor. It is built in sections of such relative size and shape that one section may be nested within the other for storage or shipment. It can be adapted to existing machines with only slight changes in the plug body. —A. P. -C.

Factors in the Purchase of Paper Making Rags*

By M. C. Dobrow[1]

From time to time, buyers and sellers have had ideas that they could overcome the inexorable law of supply and demand. Perhaps they were able to do so, but for a very short period. Sooner or later, the fundamental economic factors underlying the situation asserted themselves and determined the complexion of the market.

For twenty years the Writing Paper Manufacturers Association has collected and developed all of the vital facts and statistics affecting or likely to affect the purchase of raw materials, manufacturing and selling of the finished products. You are, of course, vitally interested in the first of these subjects—the purchase of raw materials. I believe you may have some interest in the manufacturing and selling problems which I shall touch on briefly to the extent that they relate to the price of rags.

Price of Cotton and Cotton Cuttings

For many years, there had been the impression in the industry that there was a direct relationship between the price of cotton in the bale and the price of new cotton cuttings. About ten years ago, we began working on this problem. We dug out the figures back to 1914, and we have now accumulated figures covering a period of more than twenty years. The chart and figures over the twenty-one year period indicates that the price of new cotton cuttings follows the price of cotton in the bale. Every major increase or decline in the price of cotton, with two exceptions, was followed in four to six months by a corresponding increase or decline in the price of new cotton cuttings. One notable exception was in 1925, when cotton prices sustained a drastic decline in 1924, and the corresponding decline in the price of rags did not follow until a year later. The sustained prices for cotton cuttings in 1925 were probably due to artificial factors. The attempt to corner the rag market worked for a time, but failed in the end because it could not withstand the drastic decline in the price of cotton which occurred in the summer of 1924, when cotton fell in a period of nine months from 35 cents to 24 cents a pound.

Throughout the depression, the price of cotton cuttings followed the price of cotton in the bale, with a lag of approximately six months.

I said a moment ago, that there were two instances when the general rule did not follow, but in each case, it was merely as to matter of time; the price trends were the same. In 1925 the price of cotton cuttings followed the trend of cotton in the bale, but the lag was twelve months, instead of the usual four to six. The second deviation from normal was in the New Deal period. When cotton started to advance early in 1933, cotton cuttings advanced simultaneously without any lag.

The Processing Tax

And then a new problem entered into the picture—the processing tax. When it was first instituted, it was my belief that the rags used in paper making would advance about one-half the amount of the processing tax. Over a long period, the price of white shirt cuttings had averaged about half of the price of cotton in the bale. It was my belief that the processing tax would increase the price of cotton on a similar basis. 11¾ cents cotton meant a price of 5½—6 cents for white shirt cuttings. 11¾ cents plus 4¼ cents processing tax, meant a price of 16 cents for cotton in *consumption*. A normal relationship would mean about 8 cents for white shirt cuttings. I felt that this would develop, because there was no processing tax on shoddy. The effect of the processing tax on the price of rags, however, took a longer time than had been anticipated. It can be explained only because the stocks of rags that had been carried over during the depression in the hands of dealers and others were excessive relative to diminished demand. Also, the mills had built up substantial inventories in the latter part of the depression. It was, therefore, not until the middle of 1935 that the processing tax or the price of cotton in consumption ($12 \times 4\frac{1}{4} = 16\frac{1}{4}$ cents) was beginning to make itself felt as an underlying factor in the price of new cotton cuttings. Early in January of this year, the Supreme Court declared the Agricultural Adjustment Act unconstitutional, and the processing tax was immediately eliminated. The price of cotton in consumption went from slightly under 16 cents to 11½ cents. We believe that this change in the price of cotton will ultimately be reflected in the price of new cotton cuttings.

Spot cotton declined ½ cent from 12 cents at the close of the year, and has remained fairly firm at 11¼ cents to 11½ cents, because the Government controls most of the spot supplies. The new crop, however, is selling on the Cotton Exchange at about 1 cent a pound below the spot price, whereas a year ago the differential was only ¼ cent a pound.

Fear of Fall in Price of Cotton

The action of the cotton market, with new crop months at 10¼ cents—and on some days they have dipped under 10 cents—indicates that there is more fear of a fall in the price of cotton as the year goes on. Reports from the south indicate that an increase in the acreage is probable, and also that the area will be intensively cultivated. Fertilizer tag sales thus far have been larger than last year, and more mules and farm implements have been purchased. Labor is plentiful, soil moisture is satisfactory, and the low temperatures tend to reduce the number of boll weevils surviving the winter.

Present indications—and these must be taken only as present indications, because the crop situation can always be upset by freaks of nature—are that this summer cotton will sell between 10 cents and 10½ cents. This is 1 cent a pound under the recent price, and with the elimination of the processing tax, it really means a reduction in the price of cotton in consumption from 16¼ to 10½ cents—or nearly 5 cents a pound.

Without question, there is a shortage of supplies of new cuttings. All through the fall the dealers were not receiving the amount of accumulations which they usually count on. For the last year or two they have been living off stocks which they had on hand, and in most cases these have been reduced materially. During 1934 stocks on hand at the mills declined from the extreme peak of 1933. During 1935, however, mills have maintained their stocks despite the higher rate of paper production. In other words, the stocks of rags in the hands of paper mills today are equivalent to about ten weeks' consumption, which is normal. These stocks are exactly the same as they were a year ago at this time.

* Presented at the Conference Meeting of Associated Rag Industries and Writing Paper Manufacturers Association at the annual convention of the National Association of Waste Material Dealers, Hotel Astor, New York, March 16-18, 1936.

[1] Treasurer, Writing Paper Manufacturers Association.

Diverted Material to Other Sources

The high price of cotton, including the processing tax, has diverted much of this material to other sources. We expect to see a reversal of this trend three to six months hence. The probabilities are that the spring and summer months will witness a tendency in the price of cotton cuttings to be downward until there is a readjustment to the new price of cotton.

In the sale of the finished paper product, the mills encounter economic problems which are sometimes difficult for outsiders to appreciate.

The first and foremost of these is the growth of sulphite bond as a factor in the writing paper industry. Not only has the tonnage grown, but the quality of the paper has been considerably improved. In 1914, 70 per cent of writing papers were made wholly or in part out of rags, and 30 per cent out of sulphite.

	1914	1935
Rag content papers	172,728	81,000
Sulphite papers	75,000	399,500
Total	247,728	480,500

Today the rag content papers are only 17 per cent of the total, and the sulphite papers 83 per cent.

The reduction in the volume of rag content business will be more easily reflected to you in the terms of the amount of rags consumed by these mills. Last year consumption was approximately 41,000 tons. In 1929, it was 58,000 tons, and in 1914, 87,000 tons

The technological improvement in sulphite papers has narrowed the field of rag content papers. Perhaps it is well that this has been so, because there certainly would not have been enough rags to take care of the increase in consumption of writing papers in the United States. There is, and always will be, however, a field for higher quality papers, rag content papers, where durability, permanence, and especially appearance and prestige, are important factors. To keep this business alive, it is essential that the rag content papers do not establish any wider spread in price between themselves and sulphite papers. That is the reason why rag content mills are in the difficult position of not being able to pass on any part of the recent increase in the price of rags. The increase in the last ten months alone was 32 per cent.

It should also be borne in mind that because of the competitive situation among rag content mills, as well as with sulphite papers, the general character and quality of equivalent grades of rag content papers are much higher today than they were five years ago. The 25 per cent rag content sheet today, with No. 1 white shirt cuttings, contains more value in rags than the 50 per cent rag sheet with thirds and blues did five or six years ago. To remain in the picture, rag content papers must have a quality that is easily discernible and is far above sulphite papers. The spread between the cost of these rag content papers and the sulphite papers cannot be increased without jeopardizing the already reduced volume of rag content business.

Successful Banquet Closes Waste Convention

The banquet on Wednesday evening of last week at the Hotel Astor, New York, concluding the twenty-third annual convention of the National Association of Waste Material Dealers, was largely attended and was a big success in every respect. The banquet committee, of which E. J. Keller was chairman, provided novel entertainment and the speaking was interesting throughout. Other members of the banquet committee were: Sol Ash, Maurice Goldstein, Julius Muehlstein, Carlton B. Overton, J. W. Paterson and Paul J. White.

Merle Thorpe Speaks

E. B. Friedlander, who has just been re-elected president of the Association, was toastmaster. Merle Thorpe, editor of the *Nation's Business*, was the principal speaker. He spoke in part as follows:

Your work makes it clear that one man's waste is another man's wealth.

We are told by the faultfinders that we are a profligate waster of resources. Your industry gives the lie to that. If we abhor obsolescence, you make it possible to install new and more efficient equipment because you collect, prepare and find markets for every item cast off in the old machinery. You make ridiculous the charges of wastefulness by the very evidence of the tremendous tonnage of waste materials gathered annually.

At the same time you speak eloquently of our national concern for thrift, a concern that some feel nowadays is fast disappearing. It may be, who knows, that your example may be the exhortation necessary to bring our people back to an understanding of and an appreciation of the earlier virtues of saving and conserving.

Some Services of the Industry

It is not necessary to remind this audience of some of the services the outside world knows little or nothing about, that your industry reclaims from 25 per cent to 40 per cent of the steel and aluminum, and rubber, for example, used annually in the United States. I learned in Detroit the other day that the millions of automobiles sold in the palmy days of 1928 and 1929 are now beginning to return to the scrap heap. You already know this; doubtless you have been patiently waiting for them. For, from 2½ million cars normally scrapped in 12 months, you recover 1,000,000 tons of steel, the equivalent of 5 million tons of iron ore. In the dozen other branches of your work, similar illustrations as dramatic as the metals, could be drawn.

Two things characterize American life—our decisive appetite for new things, and our consequent discarding of things still serviceable. Those of you who visit the old countries know that this American practice cannot be understood by foreign observers. Yet, in it may be found the secret of our remarkable advance in standards of living. You see it is not only machinery and the materials you deal in that become outmoded, unwanted and obsolete. It likewise applies to the mental attitude. This mental attitude and the basis of your business are Siamese twins—one cannot live without the other. New things, new ways of lift, new ideas, the American tempo—they make possible your business.

Industrial Research

You should pray each night to whatever gods you have for the growth and success of the industrial research laboratories of the land. Throughout the depression, 1,500 such laboratories, expending $150,000,000 each year, have conceived and brought to birth, no less than 100,000 new things, now pounding on the doors to get out among us and grow to maturity. This is not a fanciful picture.

We are apt to feel that almost everything has been done. We felt that way back in 1900; yet since 1900, 18 great industries have been created, employing at the primary

source 1,600,000 men, at secondary sources—such as at gas and service stations in the case of the automobile—5 to 6 millions more, not to mention other millions in clerical office positions.

I shall make no effort to stir your hope for similar developments in the years to come. If your own common sense does not tell you that, no mere magazine editor could assure you. The point is they will come, and the changes they will bring about will all be water on the wheel of this industry. You will speed the coming, as you did from 1900 on, by your ingenuity and resourcefulness in making the salvaging of the waste as efficient as possible. Without your help the day will be delayed. You must continue to improve your methods and practices as a useful gleaner of the superannuated machines and materials which must go to scrap when these new things come. You must remember that you are not, as the public is apt to think of you, merely practicing morticians or undertakers, that rather you are dealers in restoratives, providing blood transfusions to sustain industries in perpetual youth. You sort, and sift, and select with expert eye and practiced hand. If you fail in your job of conservation, obsolescence becomes a total loss, and this progress through the introduction of new things would limp and halt.

Will Keep Abreast of Sensitive Markets

You will continue, I am sure, without admonition or exhortation from me:

To keep abreast of sensitive markets, markets never uniform and constantly changing.

To keep informed of the requirements of industry, varied and far-flung, yes.

To anticipate those needs even before industry itself does.

To keep informed on constantly changing processes and operations, and to adjust your business accordingly, and

To preserve the margin of profit which is not only your due, but also necessary to carry on a part of the nation's essential business, and

To realize that all of these things can best be done by working as a team through your association, as efficient as any of any industry.

I say these things you will do because your intelligence and your enterprise will be your mentor and monitor.

Rotary Joint Bronze-Surfaced

Rotating drying rolls on paper machines must be supplied with live steam through their axes. This is accomplished by means of a rotating joint of the ball-and-socket type. It has metal-to-metal bearing surfaces, the concave part being stationary. The cast iron bearing surfaces are kept in intimate contact by two strong springs. The two castings making up the joint are available in several sizes,

FIG. 1

Bronze-surfacing efficiently and simply returns worn joins to useful life.

the average cost of which is about $20. Wear on the cast iron surfaces eventually results in leakage. Formerly, when the parts became badly worn, they were discarded and new ones purchased. To prevent production losses from idle equipment, several had to be kept in stock for replacements.

In one paper mill the wide use of the oxy-acetylene process led the maintenance man to attempt to reclaim some of the cast off joints. The concave surface was turned down; while the convex was built up by bronze-surfacing and machined. The resulting bearing of bronze and cast iron in contact was found to operate more quietly and smoothly. Leakages due to uneven wearing did not occur as soon. Also, these added features were secured considerably below the price of new joints.

The success of first trials led to the idea of surfacing both faces with bronze. It was tried and immediately proved its worth. Today it is standard practice. The results have been a longer effective life between replacements, the use and re-use many times of the same parts, and a tremendous decrease in the purchase of new parts. The operator waits until there are about six units to repair. They are then re-surfaced and machined, which permits a supply being held in stock for immediate replacement. Less than 2 hours of the welding operator's time and about 1¼ hours of the machinist's are required.

There are in use today thousands of parts which might be reclaimed at a great saving when worn. Wear-resisting bronze welding rod is easy to apply and is finding ever wider uses in many plants for reclamation work.

R. M. Sensenbrenner, vice-president and general manager of the George A. Whiting Paper Company, Menasha, Wis., has been elected president of the board of vocational education of the Menasha city schools.

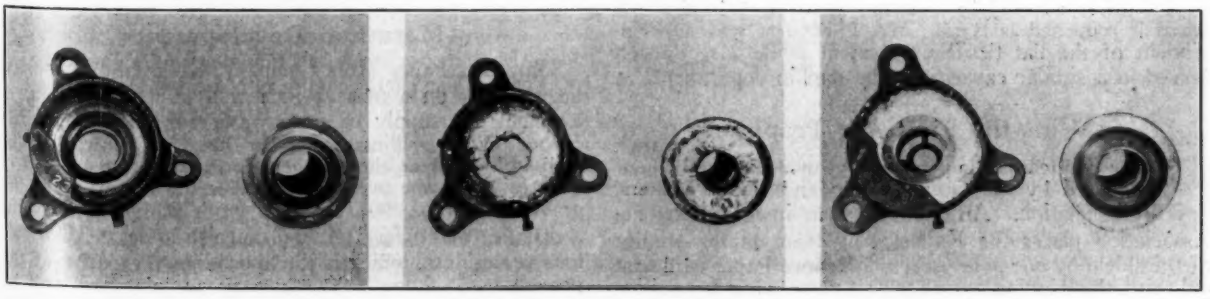


FIG. 2

Reclamation stages of steam joint. Left—before rebuilding; center—both convex and concave surfaces bronze-faced; and right—bronze-surfaced and machined to original dimensions.

Sales Compensation Study

The National Paper Trade Association has recently completed what is probably the most exhaustive study of sales compensation methods ever undertaken in any distributing trade. Over 125 houses cooperated in this study, including fine paper merchants, wrapping paper merchants and those carrying both lines.

The methods used to compensate both city and country salesmen were analyzed as were all of the factors on such compensation, such as old-age pensions, vacations with pay, stock bonuses, stock purchase arrangements, profit-sharing, group life insurance, expense allowances and ownership of automobiles. Information was also collected as to methods of determining automobile allowances for salesmen and handling liability insurance for house protection. The relation was also studied of various plans of compensation—salary, salary and bonus, commission on total sales, commission based on trading margin, commission based on net profit and commission determined by the quota system. The handling of travelling expense and entertainment expense was also scrutinized.

The report presented stressed the need for a clearer understanding both by executives and salesmen of the whole subject of sales compensation and its relation to the development of better sales talent in the trade. The report concludes, "Paying the salesman less than he is worth is to say the least short-sighted. The disrupting of a sales organization through costly turnover in the sales force generally produces direct financial loss and results eventually in increasing the competition for the house itself as well as for its competitors.

"Paying the salesman more than he is worth is unsound business and is unfair to stockholders, the public and the other salesmen. Many times a salesman may be tempted to change firms because of the apparent inducement of a high-sounding percentage offered for his services. An analysis of the basis of such offers and a thorough consideration in comparison of all the other attendant benefits may disclose that the offer is not as attractive as it originally sounded. A more complete understanding of this entire subject, therefore, by executives and salesmen cannot but be expected to lessen unfair competition for sales talent and tend toward more stable and satisfactory arrangements."

Messrs. Parkhurst and Barnett Given Farewell

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., March 16, 1936—A farewell party was given by employees of the Rushmore Paper Mills last week to Charles Parkhurst and Harry Barnett, who resigned recently as department superintendents. About 100 employees attended the affair. Both men plan to return to their homes in the vicinity of Northumberland, N. H. They assisted in installing machinery in the mill when it reopened last fall. Mr. Parkhurst was superintendent of the flat tissue department while Mr. Barnett served in a similar capacity in the napkin department.

Wins the First Aid Trophy

Twenty-two teams competed this year in the annual contest sponsored by the Ontario Pulp and Paper Makers' Safety Association. An announcement just made by the Association places the Kapuskasing team as the winner of the shield by one point over the Kenora Paper Mill first aid team, the winning score for first place being 445 points. The Kenora team wins $50 in cash. The third place was taken by Hinde & Dauch Company, of Canada, Ltd., with a score of 442. Fort Frances mill team made the lowest score with a total of 356.

Indianapolis Holds Gains

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 23, 1936—Weather conditions during the last week have not been productive of much expansion in the paper business, but the trade for the most part held the gains made since the first of the year and there is an undertone that is encouraging. Prices are being held in line in good shape. Local manufacturers and jobbers say the consumer trade has about begun to realize that prices are as low as they will be during the year. Even yet there remains the disposition to buy only for immediate needs. However, some contracts are being signed for longer periods than has been the rule for some years.

Demand for bonds and other fine papers, including covers, remains about the same as a week ago. Writing papers and bond reflect the steadiness of the fine paper market. Quite a bit of direct by mail work is being figured and some contracts have been let for spring campaigns.

The newsprint field shows a slight expansion. Wrapping paper and bags showed no increase this week, largely due to weather conditions which were adverse. Tissues are moving nicely and some feelers now are being put out for summer specialties. The summer specialty stocks carried over are very low, much more so than last year and with the first warm weather there will be a rush for the market.

The container and box industry continues to boom along. Practically all the Indiana plants report a good volume of business and many of them are working extra shifts. And the merchandise is not going to build up warehouse stocks—it is for actual orders. Warehouse stocks, which had been held low all winter, have not been augmented and with orders as they are, the factories are finding no time to build them up.

Ray M. Buss Dead

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., March 17, 1936—Ray M. Buss, 607 South Rose street, production manager of the Bryant Paper Company, died at Borgess hospital last Saturday morning, after an illness of three weeks. He was 57 years of age. Death resulted from a heart ailment.

Mr. Buss was born at Schoolcraft, August 9, 1878 and came to Kalamazoo thirty years ago, at which time he entered the employ of the Bryant company, and had remained with that concern since.

Surviving are a widow, Elizabeth; three children, George M. Buss, Marshfield, Wis., and Robert R. and Gertrude Buss of Kalamazoo; and a sister, Mrs. Murril Stuck residing near Fulton.

Marathon Developments

Marathon Paper Mills Company, Rothschild, Wis., has begun work on a new 70-inch well at its main mill, to augment the supply of pure water for its finer grades. Fisher Well Drilling Company has the contract. The well is located at the southeast corner of the mill yard, 600 feet from the present 50-inch well. It will be of the gravel wall type, 90 feet deep, with 30-inch screen for a distance of 40 feet. It will furnish at least 3,000 gallons per minute, which is the approximate capacity of the present well. About 200 yards of special gravel will be used to build up the wall for a distance of 50 to 90 feet.

Tests have been made to find water free of iron and alkali. The well is to be completed about May 20, after which electrical pumping equipment is to be installed.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MARCH 21, 1936

CIGARETTE PAPER

Boultbee & Tolby, *Sarcoxie,* Havre, 1 cs.; R. J. Reynolds Tobacco Co., *Manhattan,* Havre, 100 cs.; Champagne Paper Corp., *Manhattan,* Havre, 34 cs.; Standard Products Corp., *Paris,* Havre, 41 cs.

WALL PAPER

F. J. Emmerich, *Antonia,* Liverpool, 1 ble.; ———, *Manhattan,* Havre, 9 cs.; S. K. Lonegren, *Drottningholm,* Gothenburg, 3 bxs.

NEWSPRINT

N. Y. Tribune, *Markland,* Liverpool, N. S., 1,453 rolls; World-Telegram, *Markland,* Liverpool, N. S., 609 rolls; Bridgeport Herald, *Markland,* Liverpool, N. S., 61 rolls; Clinton Paper Co., *Markland,* Liverpool, N. S., 370 rolls; Jay Madden Corp., *Europa,* Bremen, 255 rolls; National Pulp & Paper Co., Inc., *Sandhamn,* Sundsvall, 350 rolls; S. B. Behrens & Co., *Sandhamn,* Sundsvall, 51 rolls; Jay Madden Corp., *Manhattan,* Hamburg, 192 rolls; Walker Goulard Plehn Co., *Manhattan,* Hamburg, 86 rolls; Jay Madden Corp., *Scanyork* Hango, 340 rolls; Jay Madden Corp., *Hansa,* Bremen, 302 rolls; Perkins Goodwin & Co., *Hansa,* Hamburg, 269 rolls; ———, *Stavangerfjord,* Oslo, 349 rolls.

PRINTING PAPER

Steiner Paper Corp., *Westernland,* Antwerp, 2 cs.; Dingelstedt & Co., *Europa,* Bremen, 36 cs.; ———, *Ascania,* London, 2 cs.; Steiner Paper Corp., *Blommersdyk,* Rotterdam, 10 cs.; Jay Madden Corp., *Scanyork,* Hango, 127 bls.; Senefelder Co., *Hansa,* Hamburg, 12 cs.; Dingelstedt & Co., *Hansa,* Bremen, 30 cks., 9 cs.

WRAPPING PAPER

Wax Rite Products Co., *Ilsenstein,* Antwerp, 3 rolls; ———, *Exochorda,* Genoa, 16 bls.; Jay Madden Corp., *Manhattan,* Hamburg, 117 rolls; Chase National Bank, *Drottningholm,* Gothenburg, 2,075 rolls; National Pulp & Paper Co., Inc., *Drottningholm,* Gothenburg, 755 rolls, 28 bls.; Lincoln Import Specialties Corp., *Drottningholm,* Gothenburg, 33 parcels, 294 bls. 7,166 rolls; M. M. Cohen, *Manhattan,* Hamburg, 163 rolls, 5 bls.; Jay Madden Corp., *Scanyork,* Hango, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Berengaria,* Southampton, 20 bls., 2 cs.; H. Reeve Angel & Co., Inc., *Ascania,* London, 4 cs.

DRAWING PAPER

Keuffel & Esser Co., *American Trader,* London, 1 cs.

DECALCOMANIAS

———,*Europa,* Bremen, 2 cs.; Sellers Transportation Co., *Europa,* Bremen, 6 cs.; Phoenix Shipping Co., *Hansa,* Hamburg, 7 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Antonia,* Liverpool, 6 cs. (duplex); B. F. Drakenfeld & Co., *Antonia,* Liverpool, 5 cs. (simplex).

SURFACE COATED PAPER

Gevaert Co. of America, *Ilsenstein,* Antwerp, 33 cs.; Gevaert Co. of America, *Westernland,* Antwerp, 55 cs.; Globe Shipping Co., *Hansa,* Bremen, 6 cs.

METAL COATED PAPER

K. Pauli Co., *Hansa,* Hamburg, 9 cs.; K. Pauli Co., *Hansa,* Bremen, 67 cs.

BASIC PAPER

Dingelstedt & Co., *Europa,* Bremen, 14 crates; Dingelstedt & Co., *Hansa,* Bremen, 17 cs.

TRACING CLOTH

C. Bruning & Co., *Europa,* Bremen, 29 cs.

TISSUE PAPER

Columbia Ribbon & Carbon Manfg. Co., *American Trader,* London, 1 cs.; W. J. Byrnes, *American Trader,* London, 5 cs.; W. J. Byrnes, *Berengaria,* Southampton, 6 cs.; B. F. Drakenfeld & Co., *Antonia,* Liverpool, 5 cs.

COLORED PAPER

C. Asche & Co., *H. Jaspar,* Antwerp, 11 cs.; J. W. Hampton, Jr. & Co., *H. Jaspar,* Antwerp, 2 cs.; International F'd'g Co., *Hansa,* Hamburg, 13 cs.

CREPE PAPER

———, *Vulcania,* Trieste, 102 rolls.

PAPER TUBES

———, *Hansa,* Hamburg, 16 cs.

CARD BOARD

American Express Co., *Hansa,* Hamburg, 60 cs.

MISCELLANEOUS PAPER

Japan Paper Co., *G. Maersk,* Kobe, 24 cs.; Keuffel & Esser Co., *Manhattan,* Hamburg, 14 cs., 42 rolls; Coty Processing Co., *Paris,* Havre, 4 cs.; International F'd'g Co., *Paris,* Havre, 8 cs.; Almo Trading & Importing Co., *Paris,* Havre, 18 cs.; Kraemar & Co., *Drottningholm* Gothenburg, 185 bls.; The Borregaard Co., Inc., *Drottningholm,* Gothenburg, 1,338 rolls, 391 bls.; E. H. Sargent & Co., *Drottningholm,* Gothenburg, 2 cs.; ———, *Hansa,* Hamburg, 46 bls.

RAGS, BAGGINGS, ETC.

G. M. Graves Co., Inc., *Caledonia,* Glasgow, 61 bls. bagging; ———, *Caledonia,* Glasgow, 62 bls. paper stock; ———, *Ilsenstein,* Antwerp, 51 bls. rags; E. J. Keller Co., Inc., *Ilsenstein,* ———, 54 bls. bagging; Whaling Waste Products Co., *Ilsenstein,* Antwerp, 86 bls. jute card waste; Banco Coml. Italiane Trust Co., *Ilsenstein,* Antwerp, 322 bls. rags; ———, *Navemar,* Barcelona, 60 bls. rags; P. Berlowitz, *Navemar,* Barcelona, 94 bls. rags; S. Birkenstein & Son, *Navemar,* Barcelona, 292 bls. rags; ———, *Navemar,* Barcelona, 119 bls. rags, 53 bls. bagging; E. J Keller Co., Inc., *Navemar,* ———, 83 bls. rags; Harris

Goldman & Co., *Navemar,* Valencia, 66 bls. rags; The Barret Co., *Navemar,* Valencia, 41 bls. rags; Flintkote Co., *Navemar,* Valencia, 49 bls. rags; Banco Coml. Italiane Trust Co., *Westernland,* Antwerp, 186 bls. bagging; Banco Coml. Italiane Trust Co., *Westernland,* Antwerp, 241 bls. jute waste; Irving Trust Co., *Westernland,* Antwerp, 60 bls. rags; E. J. Keller Co., Inc., *Westernland,* ———, 100 bls. rags; Manufacturers Trust Co., *Black Falcon,* Rotterdam, 71 bls. bagging; F. Stern, *Black Falcon,* Rotterdam, 72 bls. bagging; ———, *Black Falcon,* Rotterdam, 79 bls. bagging; Armstrong Cork Co., *Ascania,* London, 175 bls. paper stock; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 298 bls. dark cottons; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 224 bls. bagging; Chase National Bank, *Sarcoxie,* Havre, 129 bls. rags; Whaling Waste Products Co., *Sarcoxie,* Havre, 108 bls. jute waste; D. M. Hicks, Inc., *Sarcoxie,* Havre, 61 bls. rags; R. Blank, *Sarcoxie,* Havre, 303 bls. rags; G. W. Millar & Co., Inc., *Sarcoxie,* Havre, 85 bls. rags; Darmstadt Scott & Courtney, *Sarcoxie,* Havre, 236 bls. rags; Flintkote Co., *Sarcoxie,* Havre, 46 bls. bagging; J. T. Flannery, *Sarcoxie,* Havre, 298 bls. rags; Castle & Overton, Inc., *Sarcoxie,* Havre, 37 bls. rags; Castle & Overton, Inc., *Sarcoxie,* Havre, 190 bls. bagging; Banco Coml. Italiane Trust Co., *Sarcoxie,* Havre, 57 bls. rags; W. Steck & Co., *Sarcoxie,* Havre, 38 bls, old strings; E. J. Keller Co., Inc., *Sarcoxie,* ———, 37 bls. bagging; E. J. Keller Co., Inc., *Sarcoxie,* ———, 414 bls. rags; Darmstadt Scott & Courtney, *Sarcoxie,* Dunkirk, 38 bls. bagging; D. M. Hicks, Inc., *Sarcoxie,* Dunkirk, 14 bls. scrap twine; Royal Manfg. Co., *Sarcoxie,* Dunkirk, 44 bls. cotton waste; J. Cohen & Son, Inc., *Antonia,* Liverpool, 10 bls. rags; E. J. Keller Co., Inc., *H. Jaspar,* ———, 180 bls. rags; W. Steck & Co., *Exochorda,* Alexandria, 154 bls. rags; Castle & Overton, Inc., *Exochorda,* Alexandria, 109 bls. bagging; Castle & Overton, Inc., *Exochorda,* Alexandria, 108 bls. rags; Banco Coml. Italiane Trust Co., *Exochorda,* Alexandria, 74 bls. rags; ———, *Exochorda,* Alexandria, 124 bls. rags; W. Steck & Co., *Exochorda,* Alexandria, 49 bls. bagging; E. J. Keller Co., Inc., *Exochorda,* ———, 31 bls. rags; E. J. Keller Co., Inc., *Exochorda,* ———, 47 bls. bagging; J. T. Flannery, *Exochorda,* Marseilles, 45 bls. rags; E. J. Keller Co., Inc., *Blommersdyk,* ———, 58 bls. bagging; E. J. Keller Co., Inc., *Blommersdyk,* ———, 103 bls. paper stock; G. W. Millar & Co., Inc., *Blommersdyk,* Rotterdam, 155 bls. rags; Great Eastern Packing & Paperstock Corp., *Blommersdyk,* Rotterdam, 140 bls. bagging; Castle & Overton, Inc., *Scanyork,* Copenhagen, 128 bls. rags; Continental Bank Trust Co., *Northern Prince,* B. Ayres, 35 bls. old canvas; E. J. Keller Co., Inc., *Maidan,* ———, 55 bls. paper stock.

BAGASSE PAPER STOCK

W. R. Grace & Co., *Chimu,* Salaverry, 4,205 bls.

GLUE STOCK

———, *Vulcania,* Trieste, 325 bags hide glue; ———, *Vulcania,* Trieste, 200 bags bone glue.

CHINA CLAY

———, *Boston* City, Bristol, 25 casks.

CASEIN

———, *Sarcoxie,* Havre, 160 bags.

OLD ROPE

Chase National Bank, *American Trader,* London, 40 coils; S. Birkenstein & Son, *American Trader,* London, 40 coils; S. Birkenstein & Son, *Boston City,* Bristol, 35 coils; Chase National Bank, *Boston City,* Bristol, 71 coils; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 29 bls.; G. Kluyskens Corp., *Manhattan,* Hamburg, 113 bls.; Banco Coml. Italiane Trust Co., *Paris,* Havre, 12 rolls; W. Steck & Co., *Blommersdyk,* Rotterdam, 92 coils.

WOOD PULP

M. Sone, *Maria,* Trieste, 520 bls. wood pulp; Johaneson Wales & Sparre, Inc., *Sandhamn,* Sundsvall, 300 bls. sulphate, 50 tons; Bulkley Dunton & Co., *Sandhamn,* ———, 1,000 bls. wood pulp, 175 tons; J. Andersen & Co., *Drottningholm,* Gothenburg, 250 bls. sulphite; Johaneson Wales & Sparre, Inc., *Drottningham,* Gothenburg, 295 bls. sulphite; Johaneson Wales & Sparre, Inc., *Drottningholm,* Gothenburg, 100 bls. sulphate; D. M. Hicks, Inc., *Drottningholm,* Gothenburg, 468 bls. sulphite; Mead Sales Co., *Drottningholm,* Gothenburg, 500 bls. dry pulp; Castle & Overton, Inc., *Blommersdyk,* Rotterdam, 600 bls. wood pulp; Castle & Overton, Inc., *Scanyork,* Hango, 1,332 bls. sulphite, 259 tons; Central Hanover Bank Trust Co., *Hansa,* Hamburg, 2,671 bls. wood pulp, 411 tons; Castle & Overton, Inc., *Hansa,* Hamburg, 1,275 bls. wood pulp, 255 tons; Bank of N. Y. Trust Co., *Hansa,* Hamburg, 700 bls. wood pulp, 140 tons; The Borregaard Co., Inc., *Stavangerfjord,* Sarpsborg, 908 bls. sulphate; J. Andersen & Co., *Stavangerfjord,* Oslo, 2,210 bls. sulphite; Gottesman & Co., Inc., *Pr. Roosevelt,* Czecho-Slovakia, 913 bls. wood pulp; M. Sone, *Pr. Roosevelt,* Hamburg, 1,730 bls. wood pulp; E. J. Keller Co., Inc., *Hamburg,* ———, 336 bls. wood pulp.

WOOD PULP BOARDS

H. Fuchs & Son, *Drottningholm,* Gothenburg, 65 crates; Jay Madden Corp., *Scanyork,* Hango, 250 bls., 33 tons; Jay Madden Corp., *Scanyork,* Hango, 132 rolls, 41 tons.

WOOD PULP SHEETS

———, *Hansa,* Hamburg, 80 bls.

PORTLAND IMPORTS

WEEK ENDING MARCH 21, 1936

———, *Sandhamn,* Sweden, 5,625 bls. sulphate; Bulkley Dunton & Co., *Korsholm,* ———, 2,500 bls. wood pulp; Gottesman & Co., Inc., *Tennessee,* Norway, 750 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING MARCH 21, 1936

Chase National Bank, *G. Maersk,* Kobe, 334 bls. rags; Leigh Textile Co., *G. Maersk,* Kobe, 100 bls. cotton waste; E. J. Keller Co., Inc., *G. Maersk,* ———, 150 bls. rags; M. Sone, *Maria,* Trieste, 260 bls. wood pulp; ———, *Black Falcon,* Rotterdam, 80 rolls straw board; Castle & Overton, Inc., *Black Falcon,* Rotterdam, 150 bls. wood pulp, 30 tons; E. Butterworth & Co., Inc., *Black Falcon, Antwerp,* 148 bls. bagging; F. J. Fawcett, *Black Falcon,* Antwerp, 236 bls. flax waste; ———, *Black Falcon,* Antwerp, 70 bls. rags; ———, *Black Falcon,* Antwerp, 120 bls. bagging; International Purchasing Co., *Black Falcon,* Antwerp, 61 bls. old rope; ———, *Exochorda,* Alexandria, 31 bls. rags; E. J. Keller Co., Inc., *Exochorda,* ———, 135 bls. rags; Atkinson Haserick & Co., *Exochorda,* Genoa, 16 cs. paper; Perkins Goodwin & Co., *Sandhamn,* Sweden, 15,600 bls. sulphate; Bulkley Dunton & Co., *Sandhamn,* ———, 5,850 bls. wood pulp; ———, *Sandhamn,* Sweden, 180 bdls. wall board; ———, *Sandhamn,* Sweden, 250 bls. wood pulp; Bulkley Dunton & Co., *Consul Corfitzen,* ———, 1,250 bls. wood pulp; Gottesman & Co., Inc., *Consul Corfitzen,* Sweden, 500 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 21, 1936

Chase National Bank, *G. Maersk,* Kobe, 167 bls. rags; ———, *G. Maersk,* Kobe, 498 bls. rags; E. J. Keller Co., Inc., *G. Maersk,* ———, 200 bls. rags; ———, *Navemar,* Barcelona, 151 bls. rags; E. J. Keller Co., Inc., *Sarcoxie,*

(Continued on page 47)

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, March 18, 1936.

The main topic of the past week in the local paper market was the disastrous flood conditions and their effect on the paper industry. At the time of writing, it is difficult to estimate the damage, which must be very large. Stocks at the mills must have been ruined, in many instances. In the event of a serious shortage of paper, higher prices may be looked for, in the near future.

Conditions in the fine paper market are unsettled. Book and writing paper mills have been hard hit by the floods. Prices are showing a rising tendency. Tissues are moving in good volume, influenced by the approach of Easter. The coarse paper market is steady to firm. Some improvement transpired in the paper board market and prices are firmer.

The newsprint paper market is exhibiting a stronger undertone. Demand from the leading newspapers is well-sustained and supplies are moving into consumption freely. Manufacturing operations in the United States and Canada have been speeded up to meet current requirements. The price situation is more encouraging than for some time past.

Mechanical Pulp

Steadiness prevails in the ground wood pulp market. Production of mechanical pulp in North America and abroad is still keyed to consumption, as far as possible and, with accumulations at the pulp mills not excessive, the statistical position of the industry is considered sound. Prices are generally holding to previously quoted levels.

Chemical Pulp

The chemical pulp market continues to display strength. Orders for kraft pulp, which is particularly firm, are being booked in good volume for 1937 delivery. Quotations on imported kraft pulp, No. 2, have been advanced to $1.65 to $1.75, on dock, Atlantic ports. Bleached sulphite pulp is also attracting much attention.

Old Rope and Bagging

Business in the old rope market is only moderately active. Demand for domestic and imported manila rope is restricted. Mixed strings are moving in fairly good volume. Old rope prices are steady. The position of the bagging market is practically unchanged. Scrap and gunny bagging are quiet, while roofing bagging is in seasonal request.

Rags

The domestic rag market is rather spotty at present. Paper mill demand for new cotton rags is irregular. Prices on No. 1, white shirt cuttings, however, continue firm, while other grades are fairly steady. Roofing grades are easier, and quotations have declined slightly. No radical changes have transpired in the imported rag market.

Waste Paper

Board mill demand for the lower grades of waste paper is fairly persistent. Prices on No. 1 mixed paper and strictly folded news remain unchanged. The higher grades of waste paper are quite steady, especially white envelope cuttings and hard and soft white shavings. Paper mill interest in book stock is more in evidence.

Twine

The local twine market is fairly buoyant now that the Easter holidays are close at hand. Demand for the various varieties is brisk and the outlook for the immediate future, at least, is bright. Supplies are moving into consumption in good volume. Despite the usual keen competition, quotations remain steady, in most instances.

IMPORTS OF PAPER AND PAPER STOCK

(Continued from page 46)

———, 744 bls. rags; Castle & Overton, Inc., *Sarcoxie,* Havre, 1,482 bls. rags; Lang Co., *Sarcoxie,* Havre, 65 bls. rags; ———, *Sarcoxie,* Havre, 148 bls. rags; Castle & Overton, Inc., *Sarcoxie,* Dunkirk, 155 bls. rags; D. Galloway, *Sarcoxie,* Dunkirk, 80 bls. jute thread waste; G. W. Millar & Co., Inc., *Sarcoxie,* Dunkirk, 64 bls. jute threads; Castle & Overton, Inc., *Black Falcon,* Rotterdam, 1,629 bls. wood pulp, 290 tons; ———, *Black Falcon,* Rotterdam, 60 bls. rags; ———, *Black Falcon,* Antwerp, 13 bls. thread waste; ———, *Black Falcon,* Antwerp, 126 bls. rags; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 56 bls. new cuttings; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 90 bls. old cottons; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 29 bls. rags; Castle & Overton, Inc., *Paraguayo,* Buenos Ayres, 62 bls. old garments; J. T. Flannery, *Exochorda,* Alexandrie, 16 bls. rags; Perkins Goodwin & Co., *Sandhamn,* Sundsvall, 522 rolls newsprint; National Pulp & Paper Co., Inc., *Sandhamn,* Sundsvall, 70 rolls newsprint; Parsons & Whittemore, Inc., *Sandhamn,* Sundsvall, 111 rolls newsprint; ———, *Sandhamn,* Sundsvall, 206 bdls. wall board; Jay Madden Corp., *Scanyork,* Hango, 391 rolls newsprint; Jay Madden Corp., *Scanyork,* Hango, 102 bls. wood pulp boards; Castle & Overton, Inc., *Scanyork,* Hango, 2353 bls. sulphite, 462 tons; Lagerloef Trading Co., *Scanyork,* Hango, 167 bls. wood pulp boards; Lagerloef Trading Co., *Scanyork,* Hango, 142 rolls wood pulp boards; Johaneson Wales & Sparre, Inc., *Scanyork,* Gdynia, 1,200 bls. wood pulp, 120 tons; M. Sone, *Scanstates,* Helsingfors, 825 bls. wood pulp.

BALTIMORE IMPORTS

Washington Post, *Markland,* Liverpool, N. S., 3,057 rolls newsprint; ———, *G. Maersk,* Kobe, 918 bls. rags; Parsons & Whittemore, Inc., *City of Baltimore,* ———, 1,385 bls. wood pulp; M. Sone, *City of Baltimore,* Hamburg, 600 bls. wood pulp; Gottesman & Co., Inc., *City of Baltimore,* Czecho-Slovakia, 1,236 bls. wood pulp; Gottesman & Co., Inc., *Hallaren,* Finland, 250 bls. wood pulp; Gottesman & Co., Inc., *Hallaren,* Sweden, 2,800 bls. wood pulp; Bulkley Dunton & Co., *Hallaren,* ———, 1,250 bls. wood pulp; Bulkley Dunton & Co., *City of Hæve,* ———, 2,330 bls. wood pulp.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, March 25, 1936.

BLANC FIXE—The position of the blanc fixe market is practically unchanged. Prices are generally holding to schedule. The pulp is quoted at $42.50 to $45 per ton, in bulk, while the powder is selling at 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Steadiness prevails in the bleaching powder market. Demand is fairly persistent and shipments are moving in good volume for the season. Prices continue firm. Bleaching powder is still quoted at $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market is firmer. Domestic standard ground is now quoted at 15 and finely ground at 15½ cents per pound. Argentine and French standard ground are selling at 14 cents and finely ground at 14¼ cents per pound, all in bags, car-load quantities.

CAUSTIC SODA—Paper mill demand for caustic soda is fairly active. Prices are holding to formerly quoted levels. Solid caustic soda is selling at $2.55 to $2.60; while the flake and ground are offered at $2.95 to $3 per 100 pounds, in drums, at works.

CHINA CLAY—The china clay market is displaying strength. Shipments against contract are well up to average. Imported china clay is still quoted at $13.50 to $21 per ton, ship side; while domestic paper clay is selling at $6.50 to $12 per ton, at mine.

CHLORINE—Business in the chlorine market is fairly brisk. Contract shipments are going forward regularly. Prices are holding to schedule without difficulty. Chlorine is still quoted at $2.15 to $2.55 per 100 pounds, in tanks, or multi-unit cars, at works.

ROSIN—The rosin market is fluctuating slightly. Paper making gum rosin is quoted at $4.40 and wood rosin at $4.25 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.57 per 100 pounds, in tank cars, at works.

SALT CAKE—No radical changes transpired in the salt cake market. The contract movement is normal. Salt cake is quoted at $12 to $13; chrome salt cake at $11 to $12 per ton, at works. Imported salt cake is selling at $12 to $13 per ton, ship side.

SODA ASH—The soda ash market is exhibiting a strong undertone. Contract shipments are moving freely. Prices are steady and unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20, and in barrels, $1.50.

STARCH—Conditions in the starch market are practically unchanged. Demand from the paper mills is satisfactory for the time of year. Special paper making starch is quoted at $3.10 per 100 pounds, in bags, and at $3.37 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA—Some improvement is reported in the demand for sulphate of alumina. The contract movement is well up to average. Prices are steady to firm. Commercial grades are quoted at $1.35 to $1.60 and iron free at $2 to $2.25 per 100 pounds, in bags, at works.

SULPHUR—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton, in bulk, on orders of 1,000 tons or over, and at $20 per ton on any smaller quantity. On spot and near-by carloads, the quotation is $21 per ton. All prices are in car lots, at mine.

TALC—Most of the business transacted in the local talc market during the past week was routine. Prices are holding to schedule. Domestic talc is quoted at $16 to $18 per ton, at eastern mines; while imported talc is selling at $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers—Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

Book, Cased—

S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55

Tissues—Per Ream—

White No. 1	.82½	@	—
White No. 1 M. G.	.77½	@	—
White No. 1½	.62½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.67½	@	—
Colored	.80	@	—
Kraft	.67½	@	—
Manila	.60	@	—
Unbleached Toilet	2.60	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—			
Roll, contract	41.00	@	—
Sheets	46.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	37.50	@	—
Chip	37.50	@	—
Sgl. Mla. Ll. Chip	42.50	@	45.00
Jute Lined Chip	42.50	@	45.00
Kraft Liners	57.50	@	60.00
White Pat. Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	22.00	@23.00
Dry	22.00	@23.00
(F. o. b. Mill)		
No. 1 Domestic and Canadian	18.00	@24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	2.90
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher than Standard	2.00	@	—*
Class 3. Standard	1.95	@	—*
Class 4. Lower than Standard	1.90	@	—*
(On Dock, Atlantic Ports)			
Kraft No. 1	1.85	@	1.95
Kraft No. 2	1.70	@	1.80
(F. o. b. Pulp Mill)			
Kraft Domestic	1.80	@	1.90
(Delivered)			
Soda Bleached	2.60	@	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	8.00	@	8.15
Silesias No. 1	5.50	@	5.75
New Unbleached	8.25	@	8.50
New Soft Blacks	3.75	@	4.00
Blue Overall	5.75	@	6.00
Fancy	3.25	@	3.50
Washables	2.25	@	2.50
Mixed Khaki Cuttings	3.25	@	3.50
O. D. Khaki Cuttings	4.00	@	4.25
Men's Corduroy	2.00	@	2.25
New Mixed Blacks	2.75	@	3.00

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.75	@	1.85
Miscellaneous	1.45	@	1.55
Roofing Rags—			
No. 1	2.00	@	2.10
No. 2	1.80	@	1.90
No. 3 (bagging)	1.70	@	1.80
No. 4	1.70	@	1.80
No. 5A	1.10	@	1.20

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.25
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	4.25	@	4.50
New White Cuttings	6.50	@	7.00
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.00	@	2.25
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.70	@	1.80
Linsey Garments	2.50	@	2.60
Dark Cottons	2.00	@	2.35
Old Shopperies	1.00	@	1.05
New Shopperies	1.25	@	1.35
French Blues	2.00	@	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.20	@	2.25
Domestic	2.25	@	2.35
Wool Tares, light	1.75	@	2.00
Wool Tares, heavy	2.25	@	2.35
Bright Bagging	1.75	@	1.80
Manila Rope—			
Foreign	2.40	@	2.50
Domestic	2.10	@	2.20
Mixed Strings	.85	@	1.00
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.65	@	2.75
Ordinary Hard White No. 1	2.25	@	2.35
Hard White No. 2	2.10	@	2.20
Soft White No. 1	2.05	@	2.15
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag	.65	@	.75
Solid Flat Book	.55	@	.60
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	.85	@	.90
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.75	@	1.85
New Cuttings	1.35	@	1.45
Bogus Wrapper	.40	@	.50
Old Kraft Machine—			
Compressed bales	1.25	@	1.35
News—			
No. 1 White News	1.45	@	1.50
Strictly Overissue	.50	@	.55
Strictly Folded	.35	@	.40
No. 1 Mixed Paper	.27½	@	.32½

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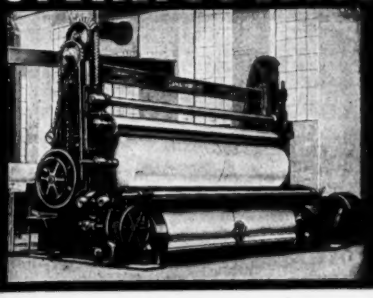

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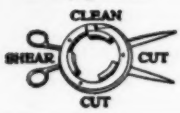

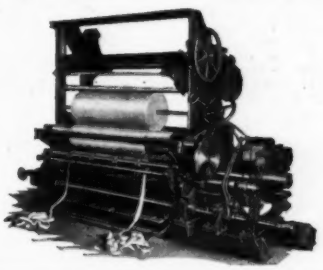

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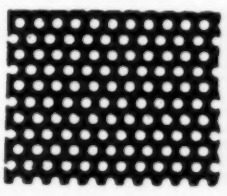

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Twines

(F. o. b. Mill).

(Soft Fibre)

Coarse Polished—

India	.13¼	@	.15¼
Belg. White Hemp	.14½	@	.17¼
India Compress	.13¾	@	.14¼

Fine Polished—

Fine India	.21½	@	.23½
Special	.19½	@	.21½

Unpolished—

Box	.12	@	.12½
Paper Makers	.09	@	.13½
Tube Rope	.10	@	.15½
Wall Paper	.11	@	.14½
Wrapping	.15½	@	.21
Special	.15	@	.15½
Soft Fiber Rope	.12½	@	.12¾

(Hard Fibre)

Bond	.12	@	.20½
Anchor	.11½	@	.13
Manila	.21	@	.2[illegible]

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05½	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—

No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45

Old Newspapers—

No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30

Roofing Stocks—

No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.15	@	—
Coated Lithograph	6.15	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.07	@	.07½
New White, No. 2.	.05	@	.05½
Light Silesias	.04½	@	.05½
Silesias, No. 1	.04	@	.04½
Black Silesias, soft.	.03	@	—
New Unbleached	.06½	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.02	@	.02½
New Black Soft	.04¼	@	.04¾
New Light Seconds	.04	@	.04¼
New Dark Seconds	1.50	@	—
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	.03½	@	.04½
Corduroy	.02	@	.02¼
New Canvas	.04	@	.04½
New Black Mixed.	.02¾	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.75	@	2.00
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.05	@	2.10

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	2.75	@	3.00
Sisal Rope	1.75	@	2.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.00	@	2.50
No. 2	.90	@	1.00
Wool Tares, heavy	3.00	@	3.25
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.30	@	2.40
No. 2 Hard White.	2.10	@	2.20
No. 1 Soft White.	1.80	@	1.85
No. 2 Soft White.	1.40	@	1.45
No. 1 Mixed	—	@	.85
Solid Ledger Stock	1.50	@	1.60
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy	.65	@	.70
Manila Cuttings	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.50	@	.60
Kraft Paper	1.10	@	1.20
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.40	@	—
Binders Board Chip.	.40	@	—
Corrugated Board	.60	@	.65
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05
No. 2 Kraft	.04	@	.04¼

(Delivered New England points)

Southern Kraft	.03¾	@	—
News Print Rolls	39.50	@	—
Straw Board, rolls	.009	—	@35.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.00	@	2.20
No. 1 Soft White.	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.60	@	.70
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.50	@	1.60
No. 1 Old Manila	.60	@	.65
White Blank News	1.30	@	1.35
No. 1 Kraft	1.20	@	1.25
Mixed Papers	.25	@	.32½
Print Manila	.50	@	.55
Container Manilas	.27½	@	—
Old Newspapers	.32½	@	.35
Overissue News	—	@	.40
Box Board Chips	—	@	.25
Corrugated Boxes	.40	@	.45
Kraft corrugated boxes	.95	@	1.00
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.30	@	2.40
Domestic	2.30	@	2.40
Transmission Rope	1.30	@	1.40
Jute Rope	2.00	@	2.25
Jute Carpet Threads.	1.00	@	1.10
Gunny No. 1—			
Foreign	2.05	@	2.15
Domestic	1.90	@	2.00
Bleachery Burlap	4.50	@	5.00
Scrap Burlap—			
Foreign	1.90	@	2.00
Domestic	1.75	@	1.90
Scrap Sisal	2.00	@	2.25
Scrap Sisal for Shredding	2.25	@	2.50
Wool Tares, heavy	2.25	@	2.35
New Burlap Cuttings	2.25	@	2.35
Australian Wool Pouches	2.85	@	3.00
Heavy Baling Bagging	2.50	@	2.75
Paper Mill Bagging	1.75	@	2.00
Bagging No. 2	1.25	@	1.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.01¼	@	.02
New White No. 1.	.08	@	.08¼
New White No. 2.	.04	@	.04¼
Silesias No. 1	.05½	@	.06
New Black Silesias	.03½	@	.04¼
Soft Unbleached	.07¼	@	.07¾
Blue Cheviot	5.25	@	5.50
Fancy	.02½	@	.02¾
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	5.50	@	6.00
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.04	@	.04¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.25
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	2.00	@	2.10
No. 2	1.90	@	1.95
No. 3	1.60	@	1.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.85	@	2.00
New White Shirt Cuttings	6.50	@	6.75
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	2.00
Old Linsey Garments	2.25	@	2.50
New Silesias	4.75	@	5.25

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	6.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	6.50	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	4.80	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	40.50	@	—
Sheets	45.00	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock.	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut.	1.25	@	1.40
Printed Manilas	.50	@	—
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.55	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.07¼	@	.07½
Fancy Shirt Cuttings	.02¾	@	.02½

PAPER TRADE JOURNAL

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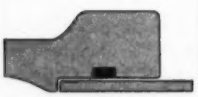

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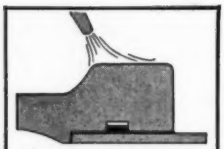

The heat of an oxy-acetylene torch applied according to instructions causes the Sil-Fos to flow, completely filling the space between the Walseal Fitting and the pipe.

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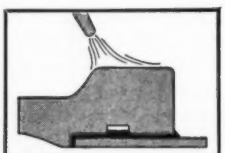

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